OCTOBER 20, 1934

Railway Age

FOUNDED IN 1856

ELIMINATE
CORROSION

UNITCAST

LESS COST
LIGHTER CARS

MORE
REVENUE TONS
PER CAR

THE UNITCAST CO. TOLEDO

THIS BALDWIN LOCOMOTIVE—

is one of a group of fourteen which were placed in passenger service by the Chicago, Milwaukee, St. Paul and Pacific early in 1930.

Over a period of 45 months this modern power averaged 9647 miles per month for each locomotive.

During this period the average maintenance cost was only 14.5 cents per mile.

Only modern locomotives — properly designed for the job — can show such high average mileage with such low maintenance costs.

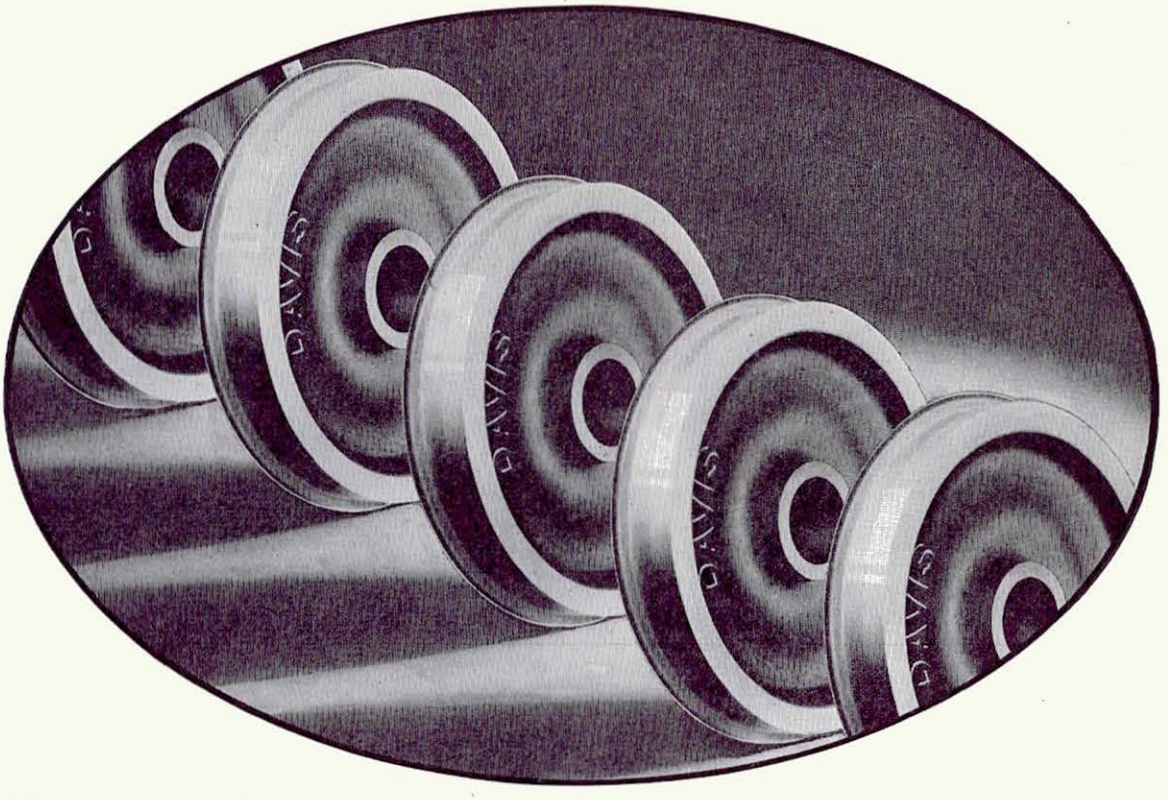
It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter. January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.

Repeat Orders Prove Superiority.....



DAVIS HEAVY SERVICE STEEL WHEELS

Performance obtained and repeat orders received from many railroads are proving the superiority and dependability of Davis Heavy Service Steel Wheels.

They are manufactured from heat treated steel of a composition best adapted to resist wear and abrasion and will show their greatest value wherever hard and heavy service requires the highest quality of material. The heavy rim of the Davis Heavy Service Steel Wheel contains sufficient metal for several wears, providing a design of wheel best adapted to meet the customary operating conditions of locomotive tenders.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

Gentlemen—

YOUR WATER!

DOES IT CAUSE

PITTING . . .
CORROSION . . .
SCALE FORMATION?

● When the water in your boilers is treated by the Nalco System, you may be sure that the boilers will last longer . . . give better service on the job . . . require less attention . . . cost far less for maintenance.

Pitting, corrosion, scale formation, foaming—these are the arch-enemies of boiler efficiency. The Nalco System of Water Treatment *stops* pitting and corrosion—*removes* and *prevents* scale formation—*decreases* foaming! Whether used as supplemental treatment for lime-soda ash plants or for wayside treatment, the Nalco System is effective, economical, profitable.

The resources of the Nalco laboratories, engineering and service staffs are at your disposal . . . for consultation, survey and specific analysis of your requirements . . . without the slightest obligation. You are urged to call upon us for further information.

NATIONAL ALUMINATE CORPORATION
6216 West 66th PLACE, CHICAGO, ILLINOIS

NALCO SYSTEM
OF WATER TREATMENT

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 97 October 20, 1934 No. 16

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An outline of this road's improvement program covering 162 all-steel cars, 104 of which were repaired in kind, 58 modernized with air-conditioning in 19.

Southern Pacific Completes Passenger Terminal at Houston..... 468
A description of this project which includes a new station and train yard, a coach repair and cleaning yard and many auxiliary facilities.

Centralized Scientific Research..... 477
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The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Now - an AUXILIARY just right for the high-wheel engine

BETHLEHEM has developed something new in auxiliary power units—one with characteristics to fit those of the fast high-wheel locomotive. Two major considerations were involved here:

FIRST, to design an auxiliary that would provide substantial additional tractive force over a considerable part of the speed range of this type of motive power.

SECOND, to design this power unit so that it would stand trailing along at the highest speed at which these locomotives ever operate.

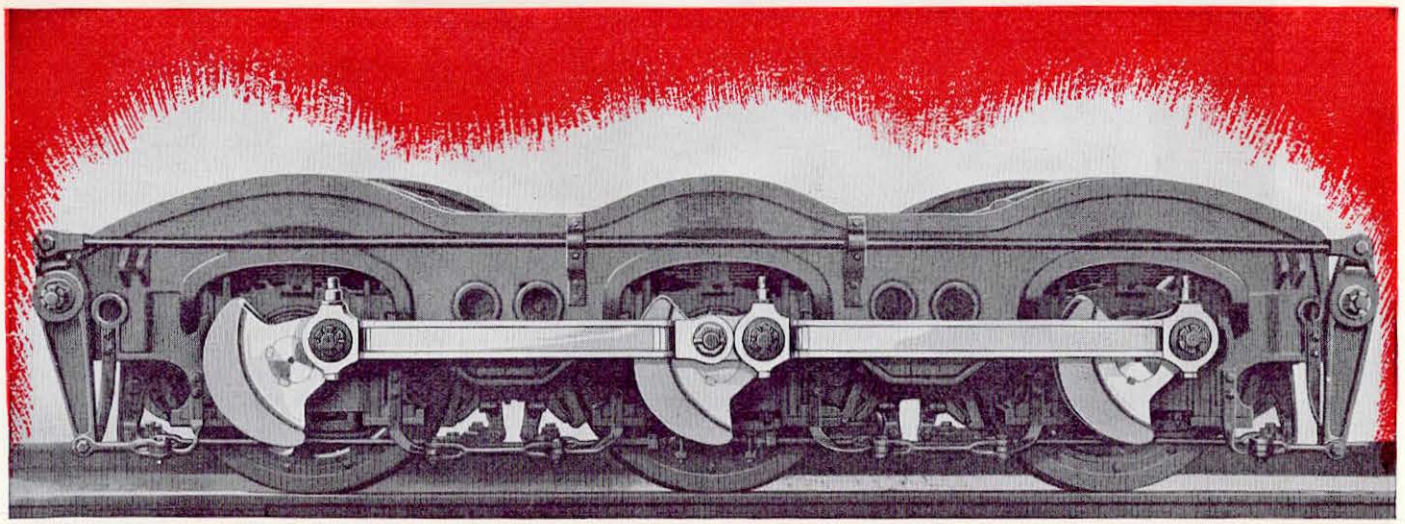
This new Bethlehem Auxiliary Locomotive has larger wheels which, with shorter side-rods, enable it to stand speeds up to 100 miles per hour or more. Six driving wheels insure ample adhesion. Cylinders are big enough to provide the 14,000 to 18,000 lbs. of extra tractive force for which the modern locomotive boiler can supply steam in the lower speed ranges. As it develops a substantial tractive force at speeds up to 25 or 30 miles per hour, the new Auxiliary helps effectively until the train is well under way.

The new Bethlehem Auxiliary Locomotive, known as Series H, brings the opportunity to make high-wheel engines much more effective motive-power units. In effect, it turns an Atlantic type locomotive into a Pacific and similarly changes other types of locomotives, without adding the maintenance costs that go with the extra pair of drivers and greater weight of reciprocating parts. The mechanism providing that part of the tractive force needed only for starting is cut out when running speed is attained, stopping wear and tear.

This Auxiliary also opens the way, when new locomotives are designed, for the use of even larger drivers, keeping maintenance down, and still having dual-service motive power. This type of engine, equipped with the new Bethlehem Auxiliary Locomotive, can be operated efficiently in either freight or passenger service. With one class of engine available for both classes of service, much more efficient utilization of motive power is possible.

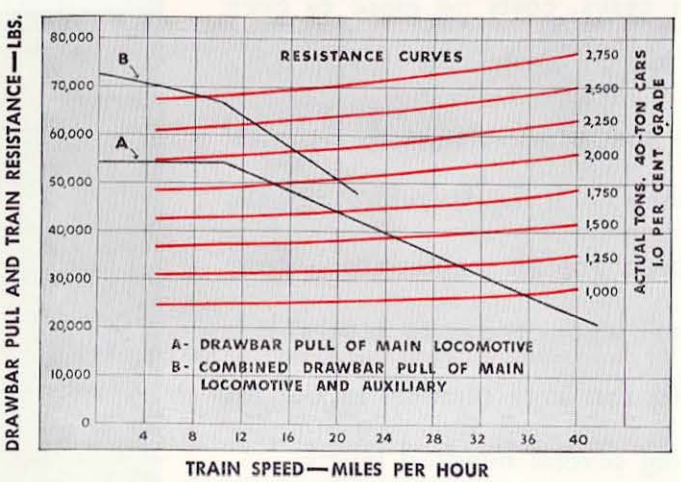
BETHLEHEM AUXIL

POWER UNIT



BETHLEHEM AUXILIARY LOCOMOTIVE—SERIES H

COMBINED TRACTIVE FORCE AND TRAIN RESISTANCE CURVES FOR HIGH-WHEEL ENGINE EQUIPPED WITH NEW AUXILIARY



Salient Features of Design

Six driving wheels.

42-in. wheels with cast-steel, spoked centers.

Wheel base—60 in. between axles, making possible short side-rods and consequently low stresses in rods and cranks.

Full-floating clasp brakes.

Commonwealth type of truck frame, fully equalized.

Bolster capacity—175,000 lbs.

Engine cylinders, 12¼ in. x 11 in.

Gear ratio—21 to 47.

Axles equipped with S. K. F. roller bearings.

Performance Characteristics

Starting tractive force practically equal to that of older Series A and S machines.

Higher tractive force at speeds above 7 miles per hour.

Can be used in freight or fast passenger service.

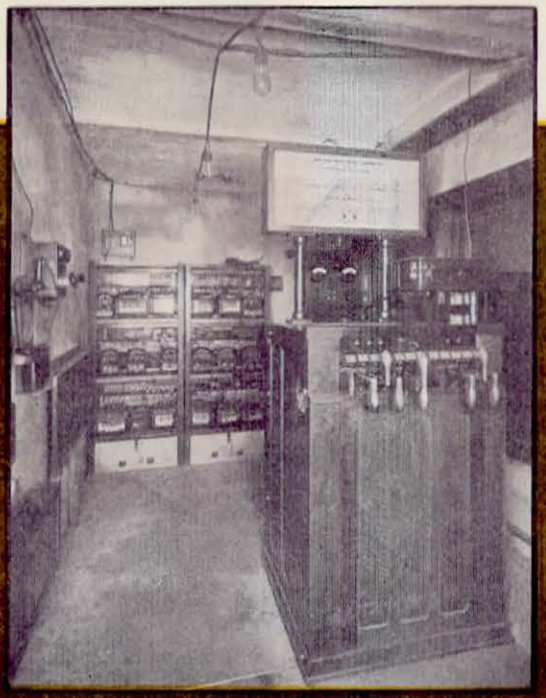
Helps effectively up to 25 or 30 miles per hour.

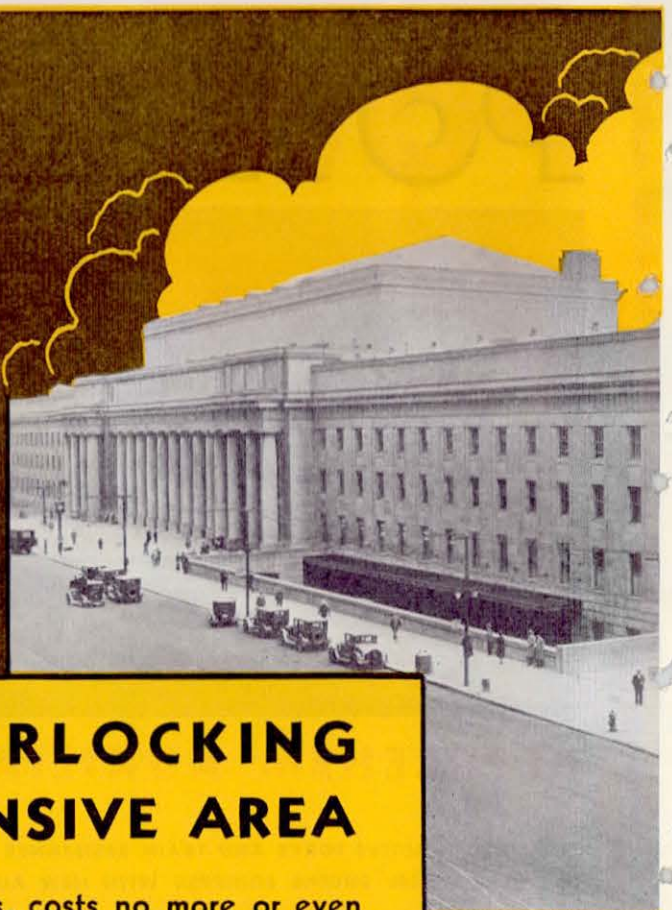
BETHLEHEM STEEL COMPANY

GENERAL OFFICES BETHLEHEM STEEL **BETHLEHEM, PA.**

District Offices: Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, St. Paul, Washington, Wilkes-Barre, York. *Pacific Coast Distributor:* Pacific Coast Steel Corporation, San Francisco, Seattle, Los Angeles, Portland, Honolulu. *Export Distributor:* Bethlehem Steel Export Corporation, New York.

IARY LOCOMOTIVE



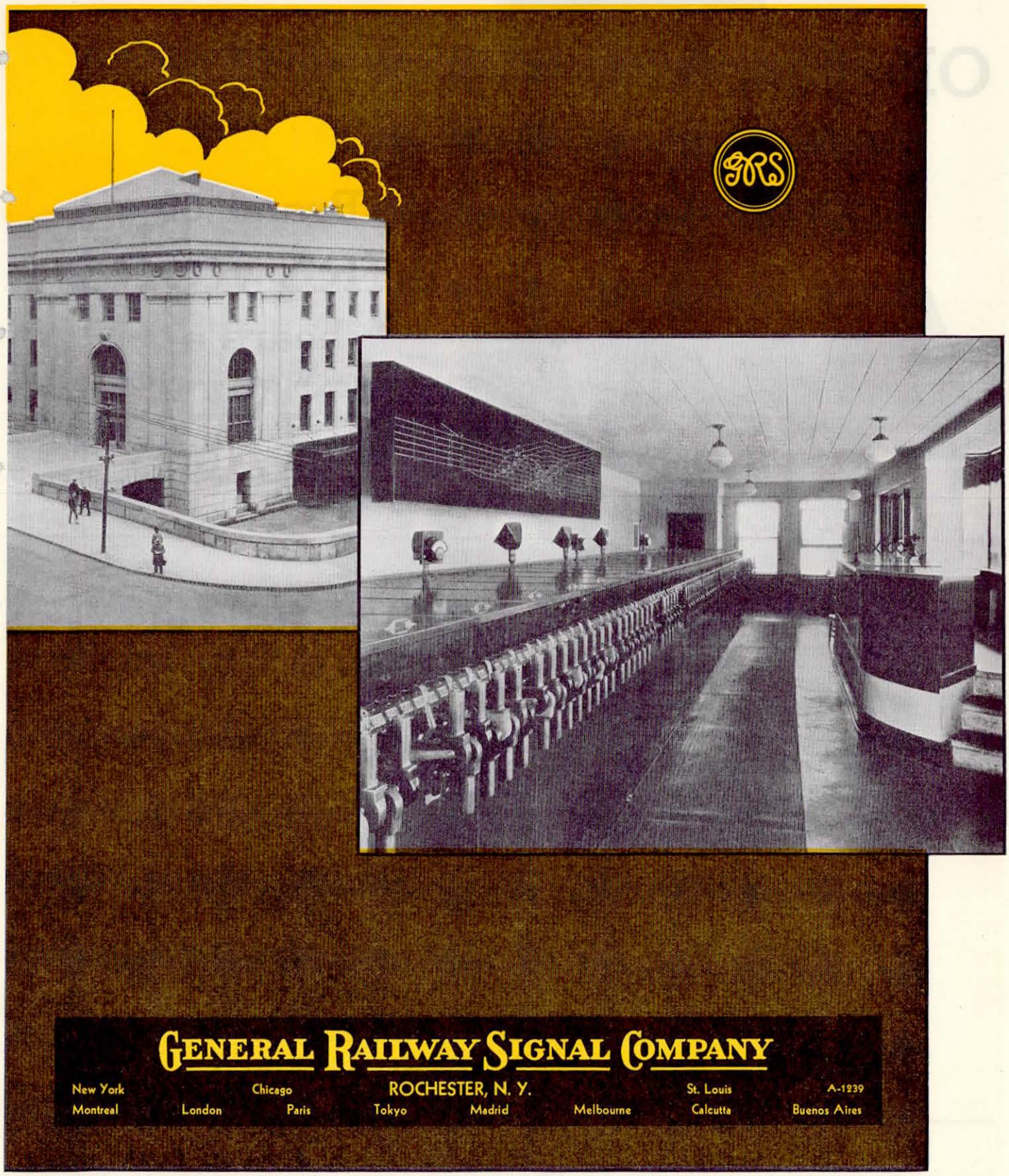


G-R-S ELECTRIC INTERLOCKING EASILY HANDLES EXTENSIVE AREA

ONE of the major reasons why the use of G-R-S Electric Interlocking is rapidly increasing, on the railways of the United States and abroad, is the extensive area that can be easily handled by one leverman. For this reason one modern G-R-S Electric Interlocking can, in many cases, be installed to replace two or more old interlockings and effect substantial economies in operating expenses.

G-R-S Electric Interlocking, in most cases, costs no more or even less than mechanical interlocking with the usual standard electrical adjuncts. It is, therefore, ideally adapted for all conditions. From a small layout requiring several levers to the large terminal layout requiring several hundred levers.

For greater speed, facility and economy of operation, replace your old interlockings with G-R-S Electric Interlockings. Our nearest office is at your service without obligation.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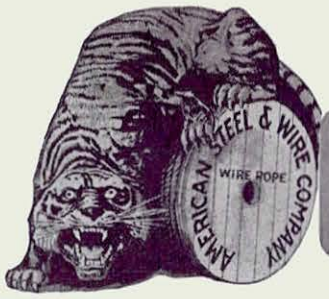

Brand of WIRE ROPE bears a SILVER STRAND

. . . THE MARK OF SUPERIOR QUALITY!

As exclusive as the identifying "Silver Strand" is the superior performance and economy of Monitor Silver Strand Wire Rope. Made of the highest quality steel, it is brutally strong, to whip the toughest kind of jobs—while its great abrasion resisting qualities assure far longer life. If you are interested in lower operating costs and greater efficiency—if you want true and proved value—it will pay you to learn in detail what the "Silver Strand" means. Take advantage of the money-saving consultation service offered by our distributors and branch offices.

AMERICAN STEEL & WIRE COMPANY

MONITOR

SILVER STRAND WIRE ROPE

1831

1934

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
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SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

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Current Year
New Locomotives
SYPHON EQUIPPED

DELAWARE, LACKAWANNA & WESTERN R. R. CO.:
20 Locomotives, 4-8-4 type, equipped with
2 Firebox and 1 Combustion Chamber Syphons.

NEW YORK, CHICAGO & ST. LOUIS R. R. CO.:
15 Locomotives, 2-8-4 type, and
5 Locomotives, 0-8-0 type, equipped with
2 Firebox Syphons.

LEHIGH VALLEY R. R. CO.:
5 Locomotives, 4-8-4 type, equipped with
3 Firebox and 1 Combustion Chamber Syphons.

BOSTON & MAINE R. R.:
5 Locomotives, 4-8-2 type, equipped with
3 Firebox and 1 Combustion Chamber Syphons.
5 Locomotives, 4-6-2 type, equipped with
3 Firebox Syphons.

ALIQUIPPA & SOUTHERN R. R. CO.:
1 Locomotive, 0-8-0 type, equipped with
2 Firebox Syphons.

SEABOARD AIR LINE RY.:
5 Locomotives, 2-8-8-4 type, equipped with
2 Firebox and 1 Combustion Chamber Syphons.

PERUVIAN CORPORATION:
2 Garratt Locomotives equipped with
2 Firebox Syphons.

CHEMIN de FER du NORD:
The remaining 20 of 42 Paris-Orleans Pacific Locomotives have been rebuilt and equipped with Firebox Syphons.

- INCREASED CIRCULATION
- IMPROVED PERFORMANCE
- REDUCED MAINTENANCE

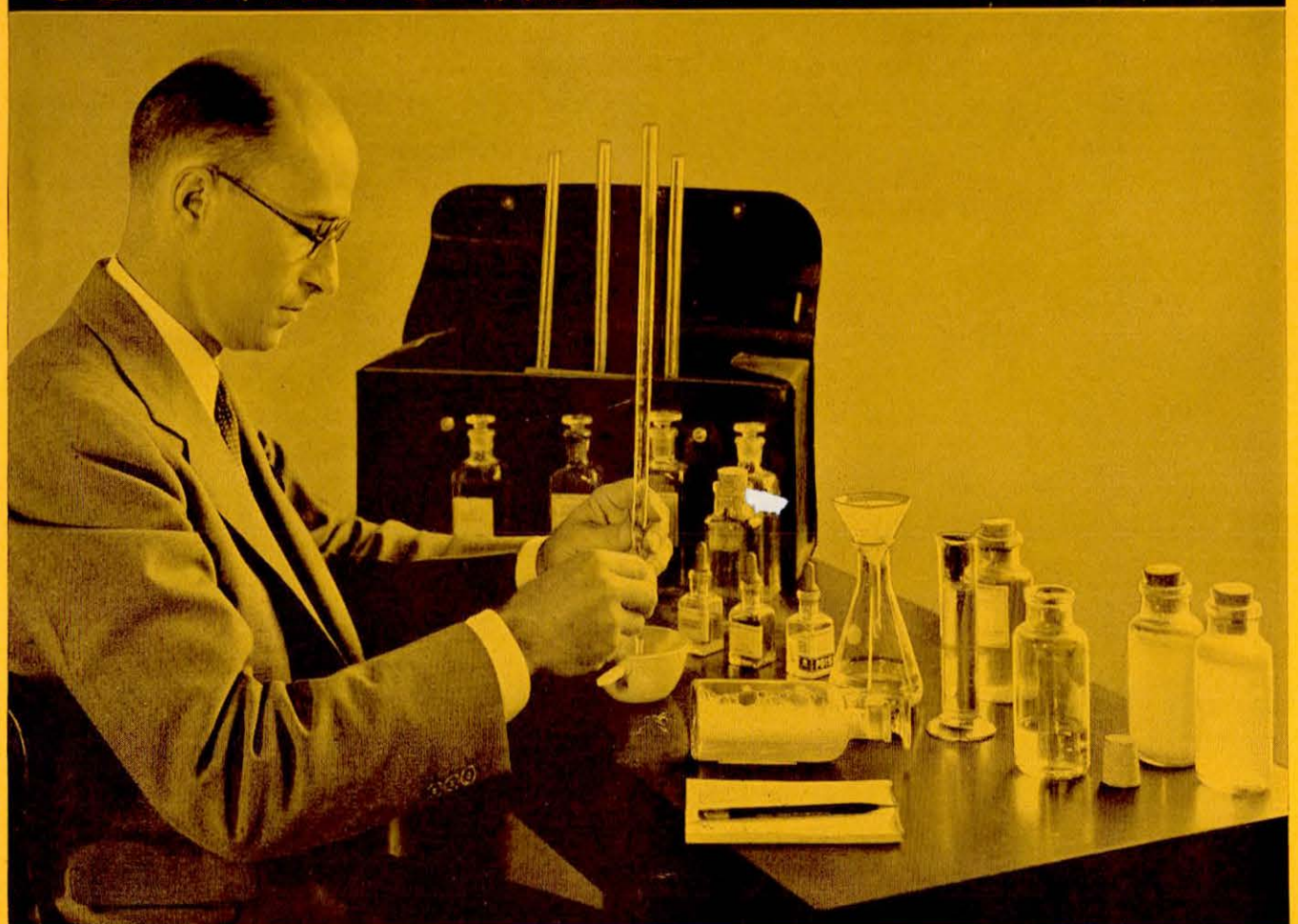
- FUEL ECONOMY
- POSITIVE SAFETY IN CASE OF LOW WATER

LOCOMOTIVE FIREBOX COMPANY
NEW YORK CHICAGO MONTREAL

Dearborn

TRADE MARK REGISTERED

SCIENTIFIC WATER CORRECTION



A TRUE CHEMICAL ENGINEERING SERVICE

The Dearborn "Case" Method originated as a true chemical engineering service in correction of boiler water troubles. In this work a full range of chemical correctives is used, their choice being governed by survey of operating conditions and complete analyses of water supplies. The many years devoted to consistent research and practice in the field of corrective treatment by this company led to the improvement in methods and increased economies obtainable today in the control of water troubles.

The illustration shows the use of one of the kits carried by Dearborn Representatives for the purpose of making tests of locomotive boiler water. With this simple portable laboratory conditions within boilers are definitely understood, and adjustment of quantity of Dearborn Treatment used or extent of blow downs is made accordingly.

Analysis of water supplies is made in the Dearborn Laboratories without charge and recommendation for suitable Dearborn Treatment and service submitted. **The economies developed by Dearborn Methods are a genuine surprise to railroads not already familiar with them. One railway system has effected annual savings of over $200,000. working in conjunction with Dearborn Engineers. Consultation welcomed.**

DEARBORN CHEMICAL COMPANY

310 S. MICHIGAN AVE., CHICAGO 205 EAST 42nd ST., NEW YORK

CANADIAN OFFICE and FACTORY, TORONTO

The strength of the streamlined train lies not in dead weight but in improved and modern design.

IS A POWER CONSUMER

Heavier equipment—heavier power . . . these have alternated in building up the weight of trains, until dead weight has become an excessive consumer of power.

Consider the weight of a first-class daylight passenger train having a capacity of 150 passengers. Such a train, consisting of locomotive, baggage and mail car, two coaches and diner, would weigh approximately **1,200,000 pounds** or 8,000 pounds per passenger.

Compare this with the weight of a three car streamlined train recently constructed by Pullman. This train, seating 116 passengers, gives substantially the same service as the conventional train. It weighs but 190,000 pounds and the dead weight per passenger is but 1,638 pounds.

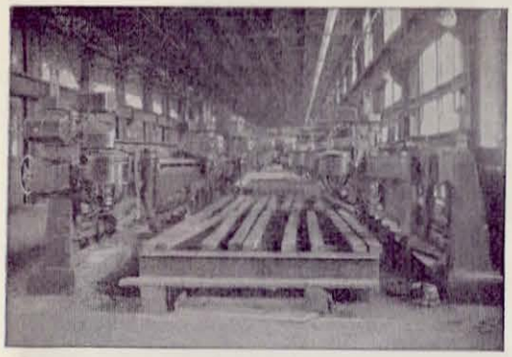
Compare the dead weights of 8,000 pounds per passenger and 1,638 pounds per passenger. The difference is indicative of the saving in power effected by the streamlined train.

PULLMAN

CAR & MANUFACTURING CORPORATION

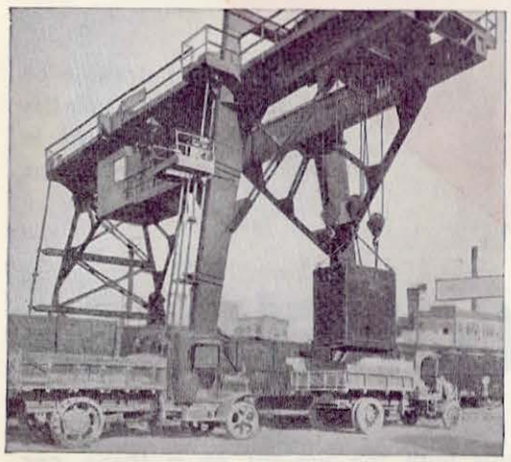
Chicago • San Francisco • Washington • Birmingham

$5,400 to $27,000 Saved Annually



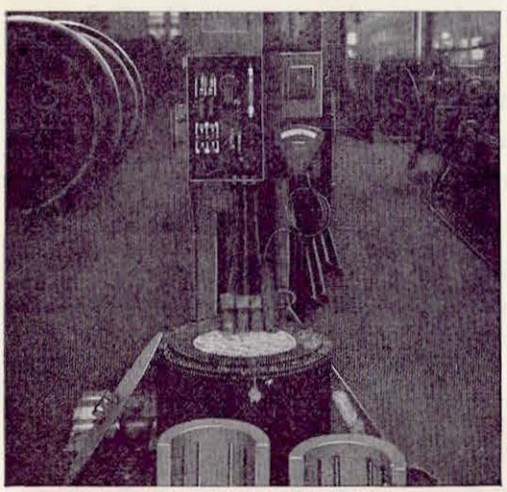
Installed in a large railroad shop, this boiler-drilling machine formerly drilled $1\frac{7}{16}$-in. holes at speeds up to 300 rpm. Modern design, however, required holes up to $3\frac{1}{2}$ in. Modernization, costing $16,000, solved the problem. The drill heads were overhauled, and new G-E motors and control were installed. Here's what the maintenance engineer says: "Our saving averages $3.60 per hundred holes, or from $18 to $90 per unit. The annual saving is from $5,400 to $27,000, depending on production." Perhaps you, too, can speed up operations and save by modernizing machines with G-E electric drive.

EVERYTHING ELECTRIC FOR



The RIGHT Equipment for Lifting

As a solution of your lifting problems, General Electric offers the RIGHT MOTOR and the RIGHT CONTROL for cranes and hoists. This G-E combination will meet your every requirement of dependability and adequate power to do the work. Our motors and control for crane and hoist service are built for rapid acceleration and heavy-duty cycles; they are constructed to withstand excessive vibration, shocks, and strain. Their inherent quality is demonstrated by the large number of successful installations in railroad shops, as well as in scores of mills and factories.



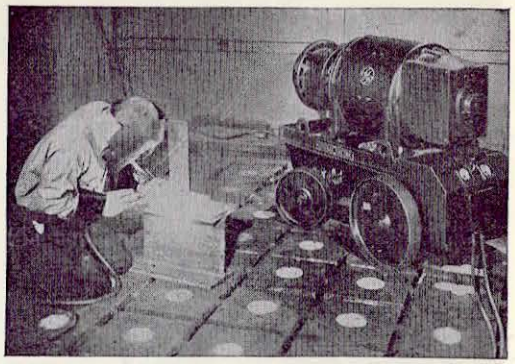
Important Savings with Electric Heat

The modernization of fuel-fired metal-melting pots in your babbitting department offers a real opportunity to save money. If the old pots are in good condition, simply get some G-E Calrod cast-in immersion heaters and hang them over the side of the pot. Connect them with a simple, automatic temperature-control device, and you're ready for all the advantages of electric heat—less dross, cooler working conditions, greater over-all economy, accurate temperature control, etc. One plant electrified 30 of its fuel-fired pots and paid for the electrification through savings the first year. General Electric has everything you need in electric heat—from midget heating units, gluepots, soldering irons, and air heaters to electric furnaces of every type. Write for catalog.

G E N E R A L

Arc Welding—Ideal Repair Tool

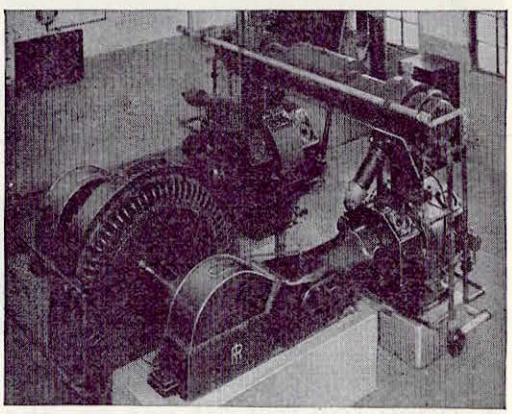
Putting broken or worn machines and equipment back into service in record time, G-E arc welders are saving repair shops thousands of dollars annually. For example, the shop superintendent of a railroad in the South estimates that by building up the flanges on worn forged-steel wheels, he is doubling their life and making notable savings for his company. General Electric has a complete line of arc-welding equipment for every railroad need—single- and multiple-operator sets for shop work; gas-engine-driven welders, of both the tractor and the trailer types, for maintenance-of-way; and electrodes.



MODERNIZING YOUR SHOPS

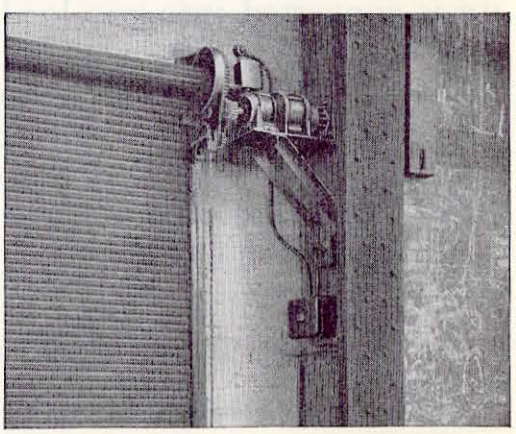
Modernization Saves $12,700 a Year

A leading railroad in the Southeast replaced its obsolete shop drives with G-E motors and control. Modern synchronous-motor-driven compressors were installed, and power was purchased from the local utility company. Result: increased production at lower cost; cleaner, lighter, and better shops; and a 50-per-cent return on the initial investment. Another user reports an improvement of power-factor to better than 99 per cent, which earns him a discount of more than 5 per cent on his monthly power bill, or approximately $1800 a year. Our new bulletin (No. GET-541) will help you check up on your power-factor.



Door Modernized at Reduced Cost

By using a G-E gear-motor, a saving of 30 per cent was made in the cost of motorizing this door, compared with previous methods of motorizing similar doors. Where formerly it took three or four minutes to open the door manually, now, at a push on a button, a G-E gear-motor opens it promptly and smoothly in twenty seconds. You, too, may find that efficient, compact G-E gear-motors offer the most economical method of modernizing much of your equipment. A complete line is available, and is described in Bulletin No. GEA-1437.



When your methods and equipment are obsolete, you pay for modernization without getting it. The right kind of modernization pays for itself and then adds to profits. Can you afford not to modernize?

Shown on these two pages are examples of modernization that include electric equipment. Perhaps there are places in your shops where modernization can be profitably applied. General Electric Company, Schenectady, N. Y.

96-47

E L E C T R I C

Its DEAD-WEIGHT CAN NOW BE GREATLY REDUCED

IF only 6½ tons of dead-weight per open top freight car of 70-ton capacity is converted into pay-load, without serious increase in the cost of the equipment, approximately 8% more revenue will be earned, with no additional operating cost. A saving of 10 tons per car is possible of achievement, resulting in a proportionate increase in revenue of 13%.

USS High Tensile Steels are rapidly commanding recognition in transportation fields because of their outstanding properties and moderate cost. These "transportation steels" can be formed and fabricated successfully without any radical changes in facilities or methods.

USS High Tensile Steels will usher in an important new era in low cost transportation, comparable only to the revolutionary change which was brought about through the substitution of carbon steel for wood in car construction.

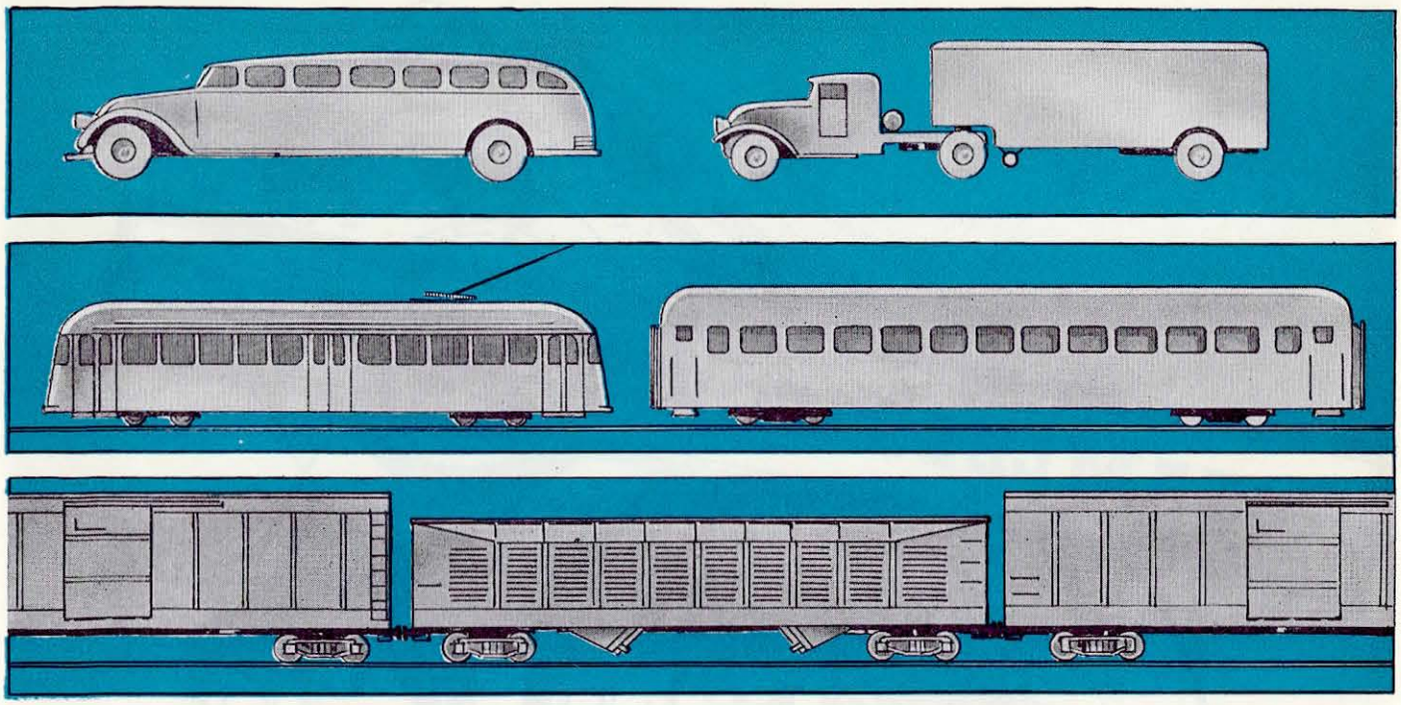
Address the Following Manufacturing Companies

AMERICAN SHEET AND TIN PLATE COMPANY, *Pittsburgh*
AMERICAN STEEL & WIRE COMPANY, *Chicago*
CARNEGIE STEEL COMPANY, *Pittsburgh*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
COLUMBIA STEEL COMPANY, *San Francisco*
ILLINOIS STEEL COMPANY, *Chicago*
NATIONAL TUBE COMPANY, *Pittsburgh*

Pacific Coast Distributors—COLUMBIA STEEL COMPANY, San Francisco, Calif. *Export Distributors*—UNITED STATES STEEL PRODUCTS COMPANY, New York, N. Y.

United States Steel Corporation Subsidiaries

USS HIGH-TENSILE STEELS



FOR ALL TRANSPORTATION USES—

USS COR-TEN

—a low Chromium Copper Silicon Steel of marked strength, and with an atmospheric corrosion-resistance conservatively estimated at four to six times that of ordinary open-hearth steel. The "Wonder Steel."

USS MAN-TEN

—a lower-priced medium Manganese Steel of impressive strength, for applications where the corrosion-resistance of USS COR-TEN is not required. This grade will be widely used wherever low cost comes first.

USS SIL-TEN

—a strong structural Silicon Steel of still lower price, for applications where neither the atmospheric corrosion-resistance of USS COR-TEN, nor the superior physical properties of USS MAN-TEN are essential.

This group of USS High Tensile Steels which will help you solve your equipment problems, was developed through extensive research and engineering. They are specially produced to meet the requirements of the builders of ransportation equipment. Write for literature and further information.

	ORDINARY OPEN HEARTH	USS COR-TEN	USS MAN-TEN	USS SIL-TEN
YIELD POINT (Lb. / Sq. In.)	25 to 35,000	50 to 60,000	55 to 65,000	45,000
TENSILE STRENGTH (Lb. / Sq. In.)	35 to 50,000	65 to 75,000	80 to 90,000	80 to 95,000
ELONGATION (% in 2 In.)	34 to 25	27 to 22	25 to 20	23 to 18
ALL THESE STEELS ARE READILY WELDED AND FABRICATED				

USS HIGH TENSILE STEELS
— supplied in —
Plates, Shapes and Bars, Strips, Sheets and Light Plates, Rods, Wire and Wire Products, Pipe and Tubular Products

NOTE: If steels of still higher tensile strength and corrosion-resistance are required, we recommend our USS STAINLESS and Heat Resisting Steels, the practical maximum of these qualities being reached in USS 18-8.

FOR LIGHTER WEIGHT USS

Rolled from a solid billet, there can be no weak spots in **J&L** Hot Rolled Seamless Steel Locomotive Boiler Tubes. Since there is no joining of metal, there are no welds to open under the stress of service. Strength is *inherent* in the **J&L** seamless process. **J&L** Boiler Tubes comply with all recognized specifications. Furnished in a full range of standard sizes, from 1" O.D. to 6" O.D. inclusive.

OTHER J&L STEEL RAILWAY MATERIALS

TIE PLATES . . . Hot and Cold Worked TRACK SPIKES STEEL PILING
CENTER SILL BEAMS, BULB ANGLES . . . AND OTHER CAR SHAPES
GALVANIZED TIE DATING NAILS RIGHT-OF-WAY FENCE
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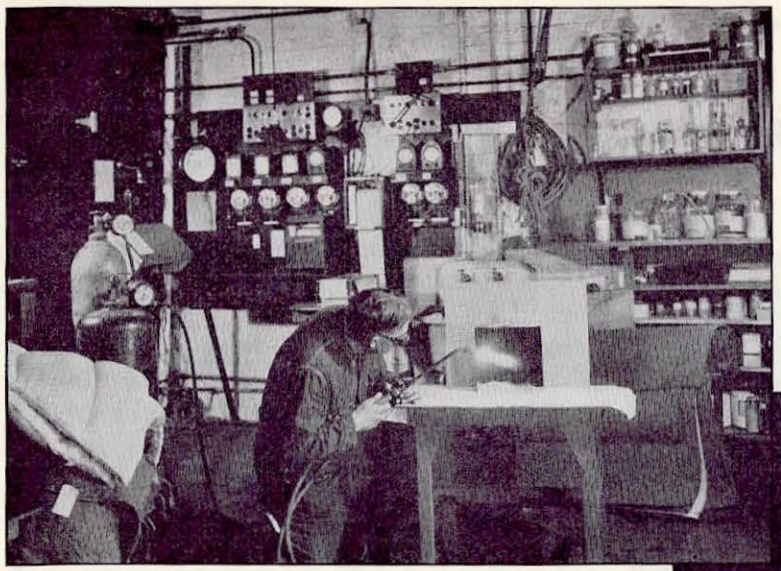

This experiment on a sample of standard Dry-Zero Blanket proves beyond question that properly installed, and filling the insulation space, Dry-Zero of itself will neither burn nor smoulder. A section of blanket is encased in aluminum and subjected to the hot flame of an oxy-acetylene torch. After burning through the aluminum panel and holding a constant flame for 5 minutes, the Dry-Zero is shown at the right to have burned only in the path of the flame — and absolutely refusing to carry the flame or smoulder further while enclosed.

Fancy dissolves into FACT in this Unique Laboratory

MUCH that is done in a laboratory is not of immediate value to the world. But what finally comes out of that laboratory may be highly significant.

It is the importance of the findings of the Dry-Zero Laboratory that has given it international recognition. Scores of railroad officials of this and other countries have visited it. Theories it has proved and tests it has carried out have given new utility to railroad car insulation and sound deadening.

Probably unequalled anywhere in the country in its equipment for testing and experimenting with insulating materials, the Dry-Zero Laboratory has been fortunate in the opportunity to assist many railroad technicians. The products* of the affiliated companies — American Hair & Felt Co. and Dry-Zero Corporation — thus have been perfected and specialized for every type of railroad use.

Railroad executives are invited to inspect and make use of these laboratory facilities at any time, without obligation.

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DRY-ZERO	The most efficient and lightest weight low temperature insulation known — standard for low temperature cars
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OZITE STANDARD HAIR FELT	Made by the genuine original platen or felted process and universally recognized as the highest standard of felted insulation.

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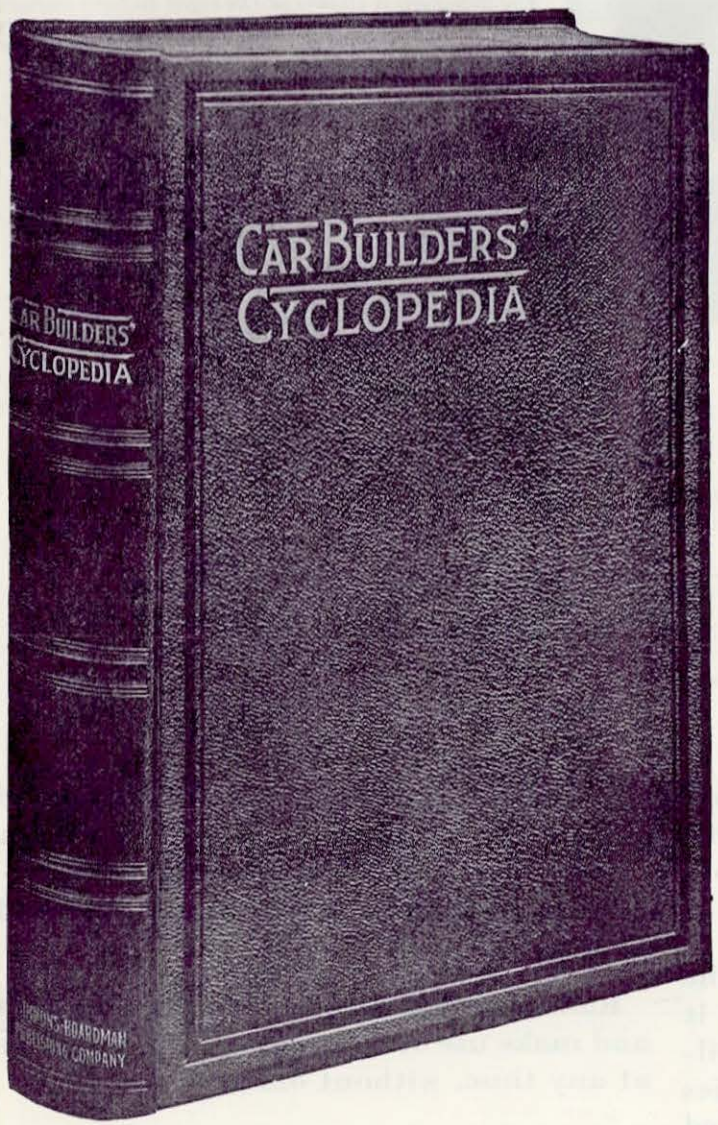

To clear the small remainder stock of the Thirteenth Edition (1931) of the "Car Builders' Cyclopedia" the price is being reduced from $5.00 to $2.50. Here is an opportunity to obtain one of these valuable books at cost, postpaid.

This volume is 9 x 12 inches in size, contains 1,260 pages illustrated with 3,400 photographs and scale drawings of all kinds of cars and their equipment. It is solidly bound in heavy buckram.

The information contained in this book is authoritative. It was compiled with the aid of an advisory committee from the Mechanical Division of the American Railway Association. The practical car department man will find in it an invaluable compilation of the best knowledge on the subject.

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Freight Train Cars: United States and Canada
Freight Car Construction Details
Railway Service Cars: Non-Revenue Equipment
Passenger Equipment Cars: United States and Canada
Rail Motor Cars: Internal-Combustion; Steam, Electric
Passenger Car Construction and Equipment
Passenger Train Lighting
Passenger Train Heating, and Ventilating: Air Conditioning
Car Trucks: Roller Bearings; Lubrication
Couplers and Draft Gears: Buffers; Attachments
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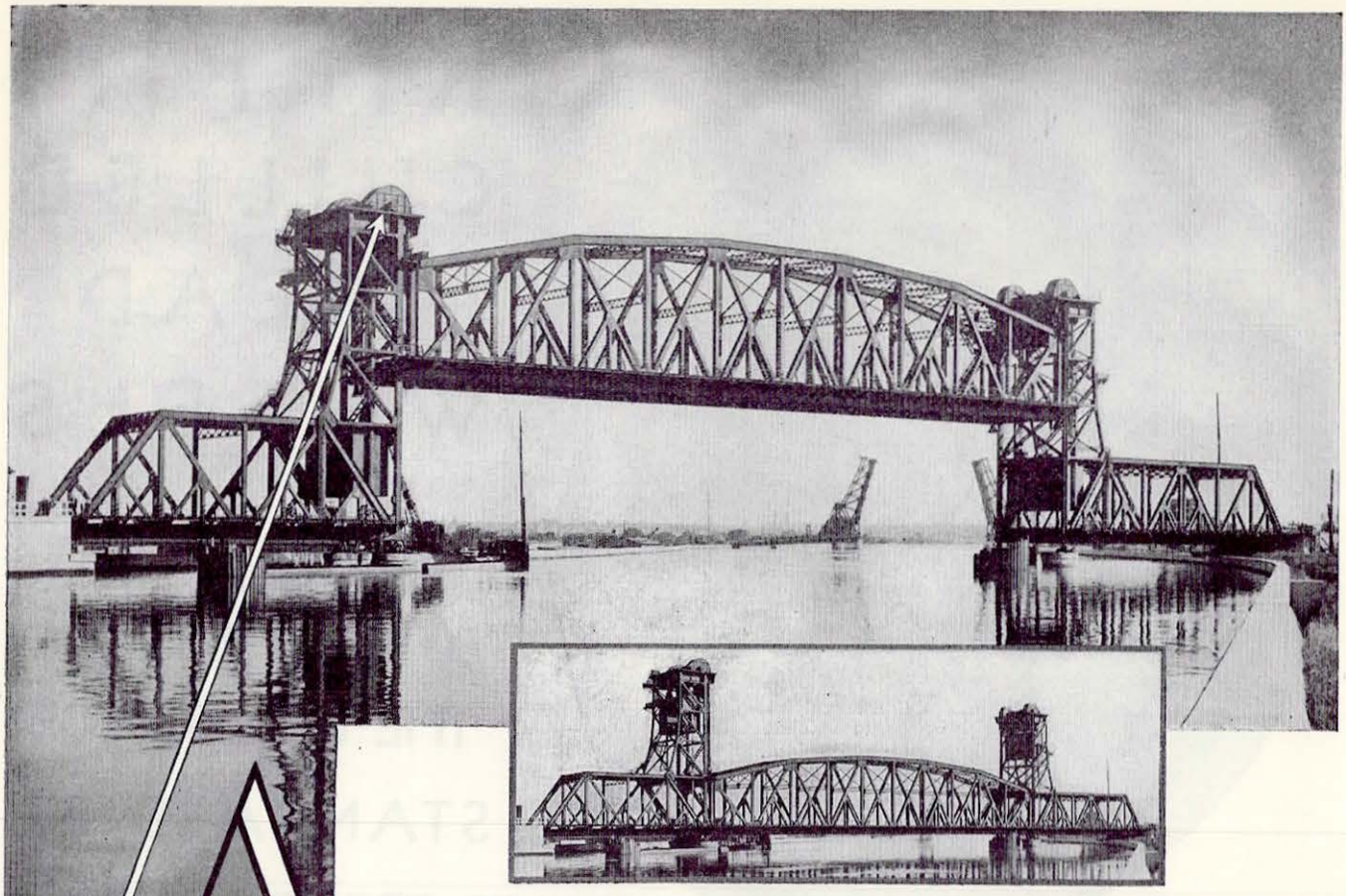
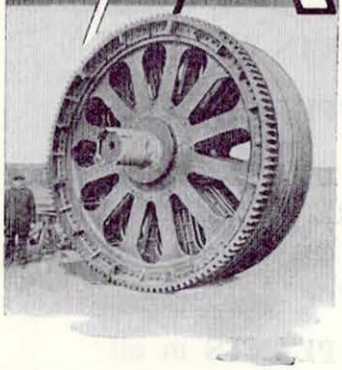


A HIGH LIFT on a LONG SPAN



One of four 13-foot sheaves weighing 37 tons each, mounted two on each tower of the Rock Island Bridge. Each sheave is grooved for sixteen 2¼ inch cables, which have one end attached to the lift span, the other to the counterweight. Power for turning the sheaves is applied directly to the ring gear, at one side of the sheave, by motor-driven shafting

OVER the Des Plaines River and the adjacent Illinois and Michigan Canal at Joliet, Ill., was a six-span fixed bridge carrying the double-track main line of the Rock Island Railroad. Navigation plans for the proposed Illinois Waterway required raising the grade of the bridge 12½ feet and replacing the former six spans with three, the middle one, approximately 300 feet in length, to be a lift span that should provide, for the present, when raised, 59½ feet head-room for vessels. A possible requirement for future navigation of 109½ feet clearance necessitated provisions in the design for a future 50-foot extension of the towers, to be obtained by raising the present three panels of each tower and inserting under them two new 25 foot panels, seated on the fixed trusses.

The towers are an integral part of the fixed spans; and on them are mounted the cable sheaves, 13 feet in diameter, also the operating machinery for raising and lowering the middle span, which weighs over 1,000 tons. All these changes were accomplished without interruption of the heavy traffic on the bridge. The design and reconstruction were directed by the engineers of the Rock Island Lines. The Herlihy Mid-Continent Company of Chicago were the general contractors. The structural steel, machinery, and electrical apparatus were furnished by American Bridge Company.

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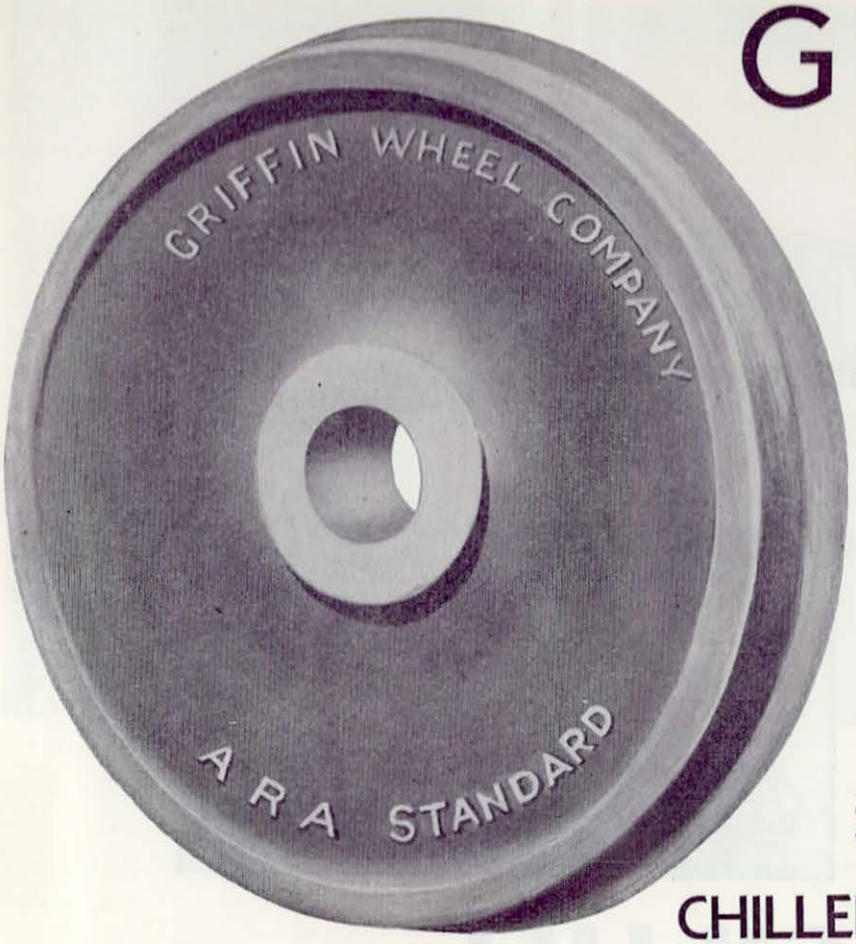

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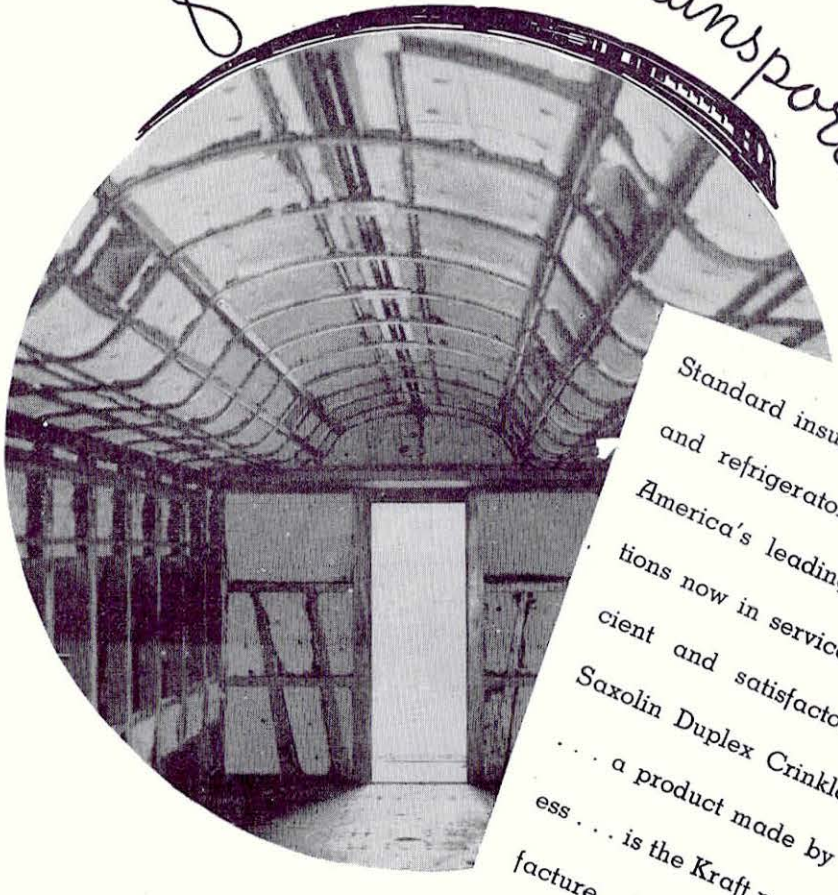

Standard insulation for railway passenger and refrigerator car equipment, used by America's leading railroads. All installations now in service are giving highly efficient and satisfactory results. «» Chase Saxolin Duplex Crinkled Waterproof Kraft . . . a product made by an exclusive process . . . is the Kraft paper used in the manufacture of HAIRCRAFT Insulation. This is a fine paper product made by The Chase Bag Co. «» The illustration shows a typical installation of Hairbestos passenger car insulation. Built by the American Car & Foundry Company, of St. Charles, Mo.

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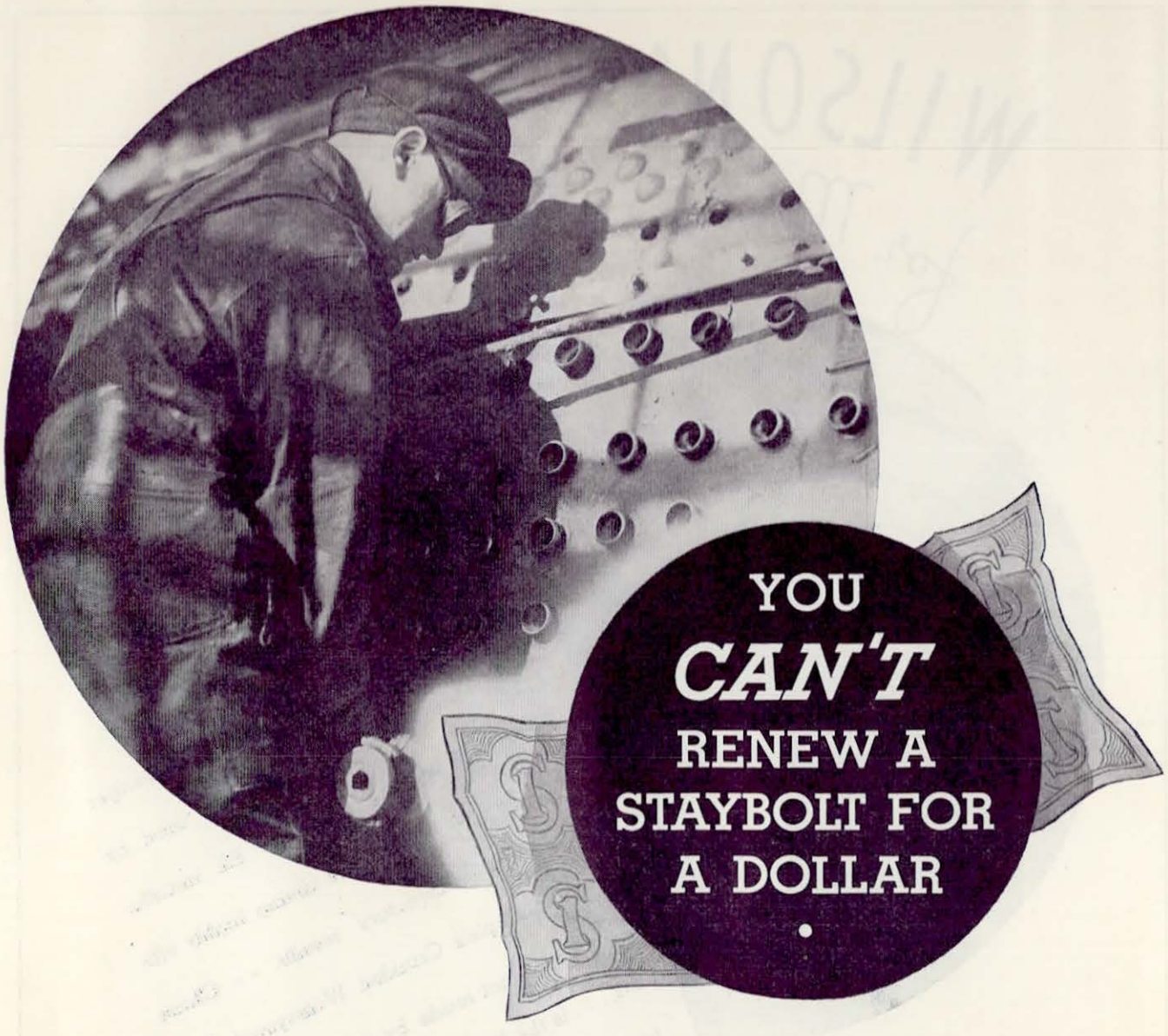

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RAILWAY AGE

Inconsistencies Among Critics of the New Deal

Criticism of unsound New Deal policies would be more effective if individuals and interests that support policies which are economically and ethically as bad as the worst the New Deal has perpetrated were not in the forefront of the critics. Raiding of the public is the same in principle and effect, whether committed by prince or pauper, and diverting tax money from legitimate governmental expenditures to greedy private interests is equally reprehensible whether these interests be members of labor organizations or wily business men.

One obvious fallacy, as the *Railway Age* has frequently pointed out, of which the administration was guilty in pursuing its NRA policy was the attempt to revive purchasing power by increasing wages and reducing hours of labor, thus increasing industrial costs and prices when purchasers were scarce even at the prices then prevailing. Short-sighted labor leaders championed this policy, and still support it in spite of its plain failure. Radicals supported this policy, too, not because they thought it would work, but because they knew very well it would not. They knew that it would discourage private investment by making it unprofitable and would give them an opportunity to inveigh against a "strike of capital." This is exactly what they are doing at the present time—condemning a "strike" which was the inevitable result of the policies they fostered.

Why "Special Privileges" for Business and Not for Labor?

The consideration and condemnation of the policy of raising wages regardless of profits gives many business men a feeling of comfortable self-righteousness which is extremely unhealthy. For while organized labor and the radicals have by political methods forced upon the government policies which are contrary to sound economics and ethics, some business interests which are most vocal in their criticism of these policies are equally guilty with the radicals and the labor unionists of anti-social selfishness. Government assistance, enabling a favored group of labor unionists to force up their wages to an uneconomic level which acts as an obstacle to the resumption of normal trade relationships, is reprehensible. But what are we to say of a high protective tariff which gives an unnatural advantage to producers of certain favored commodities while it shuts out foreign products which might be exchanged for our agricultural products? Is the New Deal which has favored the labor unionists actually any more immoral than the Old Deal which violated sound economics to tax American consumers for the benefit of favored manufacturers?

The *Railway Age* fears monetary inflation. We oppose government invasion of private industry. We are firmly convinced that an attempt to restore business by considering the level of wages alone is doomed to failure. With these views most business men would probably agree. But the same sound economic doctrine which supports our position on the foregoing is equally condemnatory of unnaturally high tariff walls which stop the flow of trade, and of subsidies in any form to private business—and at this point a good many business men would part company with us. We oppose the policies favored by organized labor, and by narrowly selfish business interests as well, not because of any animus against either, but because they are bad business and unsound economics for the country as a whole. In the long run any policy which is bad for business in general is bad for almost every particular business—and equally bad for organized labor.

Old Deal Precedents for New Deal

A well-ordered economic society presupposes freedom of labor and capital to move about where prices indicate they are most needed. In such a society the price of a commodity or a service reflects its relative abundance or scarcity, and also all the labor, rent, capital and tax costs which have entered into its production. Any natural change in any of these factors automatically affects the others—and they readjust themselves easily into new, but equally harmonious, relationships with each other. If a scarcity develops in one commodity, its price rises, which both discourages consumption on the one hand, and stimulates its production on the other, until the price is once more brought into equilibrium with those of other commodities.

Under such a system depressions may come, but there is no force present to prevent the readjustments which will occur speedily and naturally to bring about recovery. But suppose the government, or organized labor or business, steps in to interfere with the natural readjustment of any one of the factors in price of any important commodity or service—then by just so much does artificial readjustment of all the other factors be-

come necessary if equilibrium is to be re-established.

Once the business of tampering with economic laws begins, no matter for whose benefit, there is no end to the complexities which ensue, and the further tampering which becomes necessary.

The high tariffs and the subsidies to shippers by waterways and highways which were instituted by the Old Deal constituted interference with economic law for the fancied advantage of selfish business interests. The tinkering with farm prices and farm acreage and the experiments being carried out under the NRA and PWA by the New Deal are similar—i.e., they are likewise attempts to mulct the people as a whole for the benefit of particular sectional and other interests. But they are something more than that—they are efforts, however inept, to adjust the rest of the economic machine to governmental interference with a part of it for which the Old Deal is just as responsible as the New Deal—if not more so.

As Secretary Wallace has pointed out, the reduction of farm acreage has been undertaken, not because it is believed to be sound, but because, if we are going to prohibit imports of manufactured articles, then we must find some means of limiting our farm production, the surplus of which is thus prevented from being exchanged for imports. The increase which the railways are seeking in their freight rates is necessary, not alone because of the increase in wages and prices which have come under the New Deal, but also because of the loss of traffic to competitors which were left unregulated and were plied with subsidies by previous administrations in Washington as well as by the present one.

Business Must Forswear Subsidies and Special Privileges

The *Railway Age* believes that business should oppose as vigorously as it can the uneconomic policies which the New Deal has instituted. But we are also convinced that it cannot make its opposition effective if it restricts its criticism to the fallacies pursued at the behest of organized labor and the radicals. It is uneconomic and unjustifiable to permit organized labor to hold up wages to a level where they prevent recovery. But it is just as uneconomic and reprehensible, and just as much an obstacle to recovery, for organized business to hold up the government for subsidies, high tariffs and other special privileges.

Business which demands waterway and highway transportation at the expense of the taxpayers is in a mighty weak position to criticize government aid to organized labor in holding wages at an uneconomically high level or excessive payments for relief of the unemployed. It is hard for the people of one section to defend pork barrel expenditures in their section and effectively oppose such expenditures in other sections. The efforts to do so are transparent, and are largely unsuccessful. But they are not any more transparent, insincere, and ineffective than the criticism of the labor and farm policies of the New Deal by advocates of the St. Lawrence Seaway and other waterway projects and by the beneficiaries of our tariff and highway extravagances.

Common sense and common honesty alone can overcome the unsound policies into which the New Deal has been tempted. But the application of these two homely virtues will also put an end to special privileges which some of the critics of the New Deal are not above enjoying for themselves, while they would deny them to others. Business in general must clean its own house, disassociating itself resolutely from those business interests which cling to subsidies, unequal regulation and other special privileges before it can hope to make satisfactory progress in plucking the mote from the New Deal's eye.

The Folly of Our Highway Policy

Indications are that our national needs for heavy traffic pavements are about 90,000 miles or three per cent of our 3,000,000 miles total. We have today some 150,000 miles of high type pavement or about sixty per cent more than we need. But we have so poorly distributed this mileage as to leave many miles of highway underdesigned while many more miles are overdesigned.

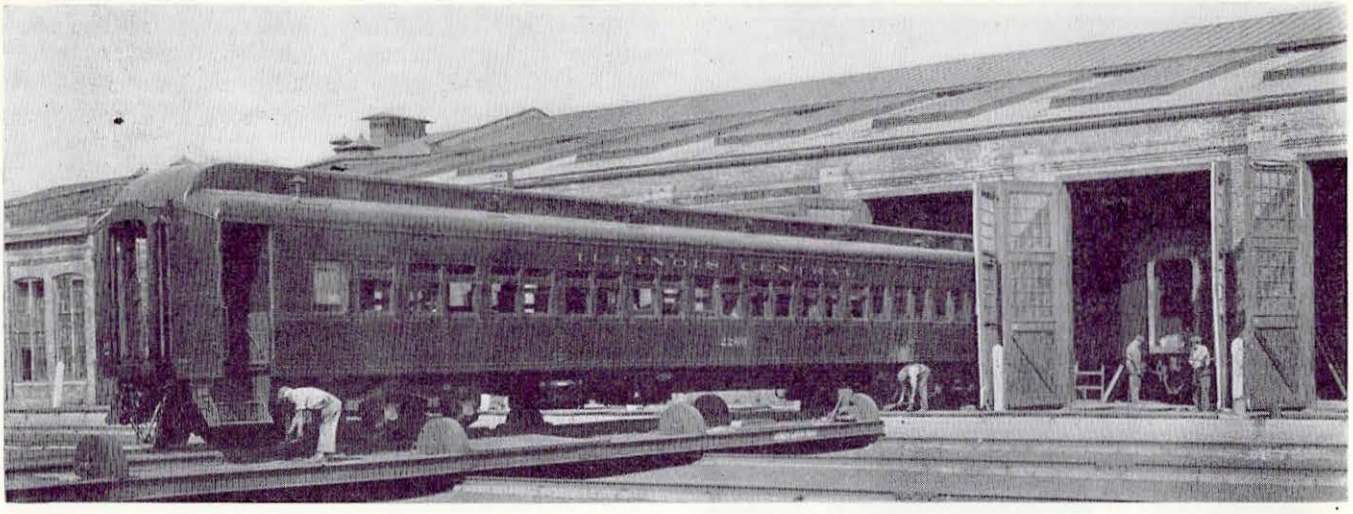
When a man wishes to go from New York to Chicago he has the option of rail, air and motor transport. When the farmer, caked in winter mud or choked in summer dust, tries to reach his market he must use the highway or stay at home and, if that highway is only a mud road, he may take as long to negotiate three miles as a joy-rider would require to get from New York to Philadelphia. You who travel only on good roads might ponder over the fact that of the 6,288,584 farms in the United States, 9.5 per cent are on high type pavements and 6.5 per cent more on all weather cheaper roads, while 84 per cent are either on mud roads or those which have never been made dustless and mudless.

For the past eighteen years the Federal Aid Road Act has been in operation and the law has required that the money be spent on 7 per cent comprising the most important roads. State revenues have largely been held to the same 7 per cent plus about another 3 per cent, and all this has been on the theory that the main roads must come first and then in the millenium we shall reach the farmer's road. Take a Federal Aid map and you will see that it coincides with a railway map. We have built a parallel system to the railways between cities when we might have "divvied up" and helped out thousands of market centers and the railroads as well by intelligent improvement of radial roads.

And now for the remedy. It's very simple—nothing more or less than economic justification for every highway project—make it show cause. If it is to cost $1,000,000, what will traffic get in return for the outlay? Is it worth the money?

Now don't get the idea that you must choose between a high cost pavement and a cheap pavement. Nothing of the sort—you have every gradation from the $40,000-a-mile pavement down to $1,000 and you can provide every characteristic of smoothness, dustlessness, mudlessness, non-skid surface, durability, at any of these costs provided you use the traffic yardstick to adapt design to traffic volume and weight.

From an Address by J. E. Pennybacker, Managing Director, The Asphalt Institute, Before the American Petroleum Association.



Reconditioned Passenger Coach Being Moved to the Transfer Table at Burnside Shops

Illinois Central Rehabilitates Its Passenger Equipment

Improvement program covers 162 all-steel cars, 104 of which were repaired in kind, 58 modernized, with air-conditioning in 19

THE Illinois Central is just completing an extensive program of improvement to its passenger equipment which involves repairs in kind to 104 steel passenger cars, heavy repairs, rebuilding and modernizing in the case of 58 cars, and the installation of air-conditioning equipment in 19 cars of the latter group. This brings the total number of air-conditioned cars on the I. C. up to 35 and, with the thoroughly renovated equipment mentioned, places this road in a position to meet the exacting demands of the modern traveling public. The work of rebuilding and re-equipping these cars was done by company forces at the Burnside (Ill.) shops, the cost of this work being met by means of a loan of $1,500,000 from the Public Works' Administration.

Referring to the table, the various types of cars repaired and reconditioned are shown to include 39 coaches, 13 diners, 6 club cars, 5 parlor cars and 2 cafe-coaches, the balance of the cars being head-end equipment which was repaired in kind. The coaches are a notable improvement in this type of equipment, possessing such relatively recent innovations as rotating, bucket-type seats, individual side lights, continuous baggage racks, lounge-smoking rooms for men and women, and modern washroom facilities.

The air conditioned dining cars as well as the lounge cars also incorporate all of the latest features designed to promote passenger comfort and convenience and, in addition, possess a distinctive beauty of interior decoration and equipment. Expert specialized advice was freely utilized in developing the outstanding decorative treatment accorded these cars. Of the 39 coaches which were rebuilt and modernized, the general contract for design, materials and fixtures used in 26 cars was filled by Mandel Brothers, Railroad Equipment Division, Chicago. Marshall Field & Company, Chicago, performed a similar service in the case of the other 13 coaches and 13 dining cars. The 6 modernized club cars were finished and equipped on the interiors in accordance with special

Interior of a Lounge Car

The Air-Conditioned Dining Car is Notable for the Provision of Circular Tables and Beautiful Decorative Treatment

plans furnished by the International Equipment Company, Chicago.

In common with many other roads, the I. C. has been compelled to defer a certain amount of passenger-car maintenance during the past few years and, in order to make the present investment in improved facilities on a perfectly sound basis, it was found essential to undertake unusually heavy repair and rebuilding work on 39 coaches, 13 diners and 6 club cars. This work involved more or less extensive rebuilding of all of the car bodies, including the renewal of corroded sections of certain parts such as center sills, framing posts, side panels, end sheets and roof sheets. Floor sheets, especially under the wet end of diners, for example, were entirely renewed and arrangements made to prevent subsequent corrosion at this point. The objective in all of this work was to put the cars in condition to withstand a period of 10 years' additional service life without appreciable intermediate repairs.

To provide necessary corrosion-resisting properties, as well as an unusually smooth external appearance, special Armco 16-gage pickled iron sheets were used in renewing side plates and other sheets in the car structures. All cars were equipped with modern passenger-type draft gears and roller side bearings. Safety axle-lighting generators and other electrical equipment were applied. Pipes and fittings were furnished by the Walworth Manufacturing Company and the expansion return bends, valves, strainers, magnetic cut-off equipment and control panels for air conditioning by the Vapor Car Heating & Lighting Company. New insulating material, applied in the cars in connection with metal air ducts, roofs, etc., comprised both Hairfelt, a Johns-Manville product made by the American Hair & Felt Co., and Haircraft, a pig's hair insulating material supplied by Wilson & Co., Chicago. Wherever practicable, the interior surfaces of all metal sheets, air ducts, etc., were coated with a special compound for rust prevention, sound deadening and insulation, furnished by Dednox, Inc., Chicago.

Truck reconditioning work was gone into with unusual thoroughness, the trucks being completely dismantled and new or re-turned wheels and axles applied. The truck frames were carefully squared, pedestals equipped with wear plates, accurately finished equalizers applied and journal boxes, made of Pullmanite metal, installed. Excello hardened steel pins and bushings were used throughout in the spring and brake rigging. All of the diners and lounge cars are equipped with the Pullman mechanical-type air-conditioning system and Frigidaire refrigerating units.

39 Modernized Passenger Coaches

The car bodies and trucks of the 39 coaches were thoroughly reconditioned. The interiors also were completely redecorated and re-equipped, the general idea being to present to the public features of comfort, roominess and luxury not generally available in this type of car.

The most striking change in the coach interior arrangement was the provision of men's and women's lounging rooms in opposite ends of the car, these compartments being pleasingly decorated and equipped with comfortable chairs, modern lavatories and toilet facilities. The men's room, with a floor area of about 7 ft. by 12 ft., has a seating capacity of six. It is finished in various color schemes conforming to those used in the different car interiors. The chairs, made by the American Chair Company, Chicago, and by Lloyd's Manufacturing Company, a division of Heywood-Wakefield Company, Boston, Mass., are of wood or tubular chromium-plate frames, upholstered in leather. Two Crane porcelain wash-stands are provided, with an aluminum-frame mir-

Illinois Central Passenger Cars Reconditioned at Burnside Shops

Class of Car	Construction	Work Performed	No. of Cars
Mail	Steel	Repaired in kind	30
Baggage	Steel	Repaired in kind	27
Baggage and smoker	Steel	Repaired in kind	7
		Repaired and modernized	4
Coach	Steel	Repaired in kind	22
		Repaired and modernized	15
Compartment coach	Steel	Repaired in kind	9
		Repaired and modernized	13
Chair	Steel	Repaired in kind	2
		Repaired and modernized	7
Dining	Steel	Repaired, modernized and air-conditioned	13
Club	Steel	Repaired, modernized and air-conditioned	6
Parlor	Steel	Repaired in kind	5
Cafe-coach	Steel	Repaired in kind	2
Total	Steel	Repaired in kind	104
		Repaired and modernized	39
		Repaired, modernized and air-conditioned	19
		Total	162

The Coaches Are Fitted with Comfortable Reclining-Back Seats

ror mounted above them and soap and paper towel dispensers conveniently available. Suitable center lights and a single light over the mirror are installed. Similar equipment is provided in the women's room with the exception that the chromium-plated chairs are upholstered in fabric. The floor area of the women's room is about 7 ft. by 8 ft. and the seating capacity four.

The main passenger section also presents a striking appearance because of the unusual seating and lighting arrangement, color scheme, etc. This compartment, about 42 ft. long, is equipped with 20 double, rotating, adjustable-back, bucket-type seats, spaced 48 in. on centers, and accommodating 40 people, thus bringing the total seating capacity of the 72-ft. car up to 50. In the case of the Mandel-equipped cars, the coach seats were furnished by the Coach & Car Equipment Company, Chicago, with upholstery supplied by L. C. Chase & Co., Boston, Mass. Double rotating bucket-type seats in all of the other coaches were furnished by Heywood-Wakefield, with upholstery supplied by Marshall Field.

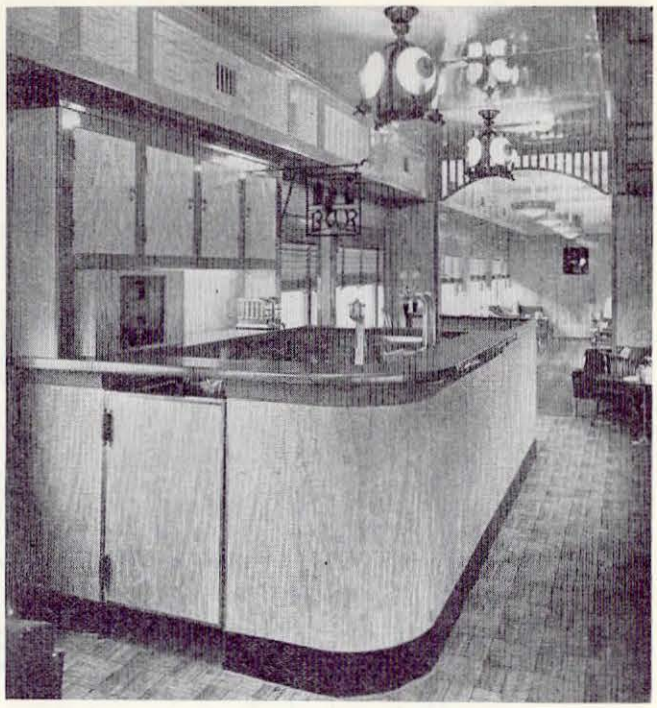
The overhead construction of the coaches was unchanged, but the baggage racks were closed to simulate one continuous rack the entire length of the main passenger section. Window shades are of Pantasote. The center lights in the car were unchanged, but 20 side bracket lights, located below the basket racks, are a new design by Adams & Westlake, giving a spot-light effect at each double seat and having an individual snap switch at each fixture. Heater pipes in the car were lowered somewhat so as not to interfere with the rotating bucket-type seats. The floor covering consists of a cork composition covered with linoleum and a 22-in. aisle carpet.

The coach interiors are finished in four general color schemes: Namely, blue and gray, 13 cars; blue and ivory, 13 cars; tan and cream, 6 cars; and green and tan, 7 cars. Coach exteriors are finished in standard green lacquer.

Air-Cooled Dining Cars

The 13 rebuilt dining cars are equipped with a mechanical air-conditioning system, which gives accurate control of temperature and humidity conditions well within the comfort range regardless of outside temperatures. The dining room, with a seating capacity of 32, is provided with rectangular, semi-circular and circular tables, so arranged as to give an interesting variety of table arrangements such as are found in some of the best hotels and clubs. The side walls, from floor to window ledge, are finished in a medium green; window ledge to lower deck, a pale green and ceiling ivory. The window trim, curtain boxes, door trim, etc., are medium tan, window sash being dark tan and lower deck insert panels ivory.

The Men's Room Is a Feature of the Reconditioned Coaches



Open Buffet-Service Bar which is One of the Novelties Introduced in the Refitted Lounge Cars

The lighting fixtures, supplied by the Safety Car Heating & Lighting Co., include five long-stem light chandeliers and three light brackets with shades. Window shades are of Pantasote with binding ribbon to match the frame and shade material. The floor covering consists of Wilton carpet, 27 in. wide, designed in colors to harmonize with the general interior color scheme.

Two artistic scenic views, taken along the line of the Illinois Central, are shown in pictures prominently displayed at each end of the dining section. These pictures are enlarged, hand colored and framed in walnut. Another decorative feature is a nickel-silver flower vase snapped in a bracket on the window pilaster between the double windows with a spring plate.

No change is made in the kitchen and pantry arrangement of the diners except the provision of copper floor pans under the floor racks and stainless-steel sinks, work tables and counters, which is now standard practice on I. C. dining cars.

Six Lounge Cars Notable for Beauty of Interiors

The six lounge cars, finished by the International Equipment Company in three groups of two similar cars each, are notable for the fine choice in color combinations and the skillful selection of woods to give striking effects. Each car has two sections, the lounge end and the buffet end, separated by an open buffet service bar, supplied by the Liquid Carbonic Company, Chicago. The exterior surfaces of this bar and all other wood finishes in the car are covered with Flexwood, a thin veneer now being manufactured and introduced for the first time in the railway field by the U. S. Plywood Company, New York. This veneer, cut only 1/85 in. thick from rare wood logs by a special process and secured by water-resisting adhesive to a thin canvas backing material, is extremely flexible and can, therefore, be applied

(Continued on page 481)

The New Station from the Street Side

Southern Pacific Completes Passenger Terminal at Houston

Project includes a new station and train yard, a coach repair and cleaning yard and many auxiliary facilities

THE Southern Pacific has just completed and placed in service a new passenger station and auxiliary facilities at Houston, Tex., which comprise one of the outstanding projects of this character on which work has been prosecuted during the last three or four years. This terminal, which cost approximately $3,500,000, was financed in part by a loan from the Reconstruction Finance Corporation. It includes, in addition to the station building itself and the train and coach yards, the construction of two grade-separation structures, the cost of which was shared by the city, a realinement of streets in the vicinity of the station, and the enlargement and modernization of the adjacent facilities of the Railway Express Agency.

The new station, like the old one, is of the through type, with the station floor and the tracks at the same elevation, but with the movement of passengers across the tracks, which comprised one of the objectionable features of the old station, avoided by means of subways under the tracks that afford access to ramps to the station platforms. It will accommodate the 40 to 50 trains of the Southern Pacific that enter and leave the city daily over six different routes. Houston is the terminal station for all these trains except those that operate through between New Orleans and the Pacific coast.

Old Station Built in 1888

The old structure was built in 1888, when the population of Houston totaled 27,000, as compared with the present population of nearly 300,000. It is located near the intersection of Melnar (Eighth) street and Washington avenue and faces on the latter thoroughfare. The tracks and platforms were covered by a passenger train-shed that accommodated six tracks. This shed, having a length of 600 ft. and a width of 95 ft., is still in such an excellent state of preservation that it has been dismantled and moved to a location over the new coach yard. In its new location this shed covers six tracks between concrete platforms and will shelter 48 passenger cars. It affords weather protection for coach yard operations and protects Pullman and other cars from the weather while in temporary storage.

Additional Property Acquired

As the railroad property in the vicinity of the old station was not sufficiently wide to accommodate passenger facilities of the capacity demanded by the volume of business now being handled, it was necessary for the company to acquire additional property. The primary obstacle to the acquisition of property south of the old station was the presence of Washington avenue, which is a main artery for street traffic between the north and west portions of the city and the downtown business section as well as for heavy through traffic between Galveston and Dallas. In order, therefore, to permit it to acquire the necessary additional property the railroad entered into a contract with the city in which, among other things, the city agreed to vacate part of Washington avenue and to reroute the traffic.

In accordance with the agreement, the railroad purchased the property bounded by Smith (Sixth) and Melnar streets, Washington avenue and Buffalo bayou. The railroad then conveyed to the city a strip of property along the south side of this tract on which was constructed an extension of Franklin avenue over which the Washington avenue traffic was rerouted, permitting the closing of a section of the latter thoroughfare 580 ft. in length. As a consequence, traffic now crosses between Washington avenue and Franklin avenue at Melnar street instead of at Fifth street, as formerly.

The city further agreed to participate in the cost of constructing subways to carry Milam (Third) street and Houston avenue under the railroad's tracks, these streets formerly crossing at grade. Moreover, the city agreed to purchase property along the railroad's north property line and to construct thereon a new trafficway

linking Milam street and Houston avenue. This permitted the closing of the grade crossings where Smith and Elder (Tenth) streets crossed the tracks. The subways and all street changes involved in the project were completed before the construction of the station was undertaken.

The New Station

The new station is located immediately to the south of the old station, in the rectangular area that was acquired by the railroad under the agreement with the city. It faces the south, with the facade set back about 200 ft. from the extension of Franklin avenue, the intervening area being given over to parking space and driveways. The station has an overall length of 392 ft., the central portion, which is 162 ft. long, being four stories high and the wings, which are 115 ft. long, ranging in height from three stories adjacent to the central portion to one story at the ends. The overall width of the four-story portion, which contains the main waiting room, is 80 ft. while elsewhere it is 60 ft.

The building is of steel frame construction, fireproofed with concrete and with concrete floors and roof. The front and end walls are faced with cream-colored Texas limestone on a base of red Texas granite from Marble Falls, Tex., while on the track side the exterior wall is of face brick trimmed with limestone. Architecturally the structure is of modern design, setbacks being employed liberally in the treatment of the facade. The lines of the central portion, the facade of which extends about 10 ft. in front of the wings, are enhanced by five high arched windows that open into the main waiting room. A feature of the architectural treatment is the use of black Minnesota granite as a trim for the entrance and exit doorways at the ends of the central section. A copper-covered marquise extends along the street side of the station for the full length of the building, with the exception of the single-story portions at each end.

On the track side of the building an outside concourse 45 ft. 6 in. wide and 187 ft. 4 in. long is interposed between the building and the tracks. This concourse, which is provided with the necessary fences and gates for the segregation and handling of the traffic, shelters the entrance and exit ramps to the passenger subway and provides a considerable covered space, equipped with seats, for the accommodation of patrons waiting the departure of trains. It is roofed with concrete slabs on steel trusses and along the area adjoining the ramps the track side is enclosed with fixed and ventilated sash, while elsewhere the covered area is left open at the side for ventilation.

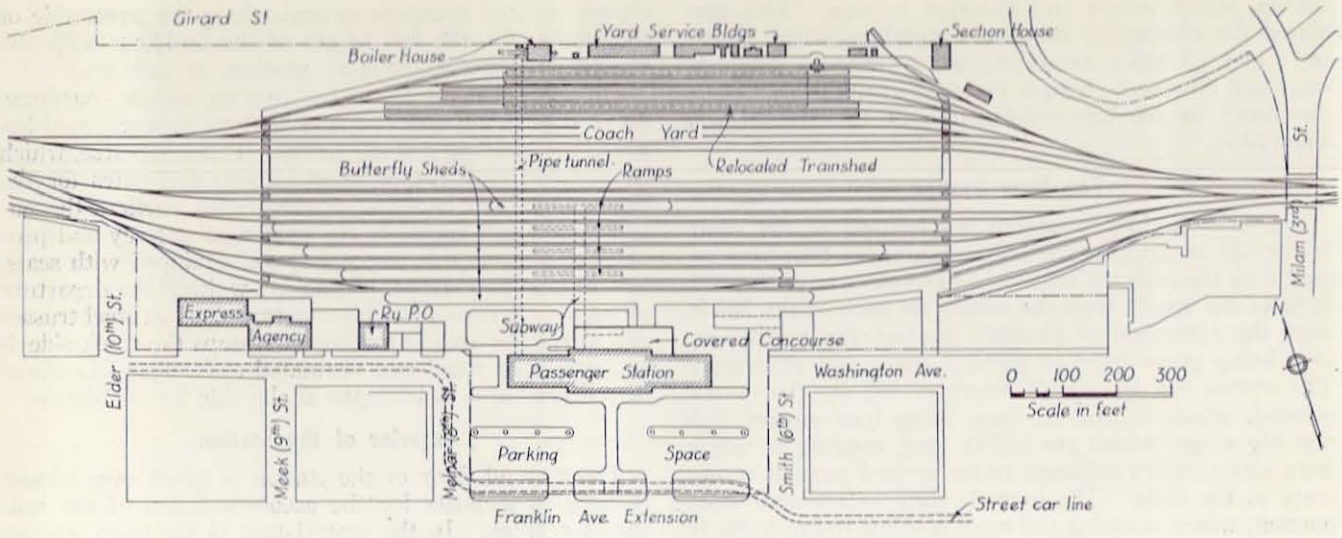
Interior of the Station

The ground floor of the station is given over almost entirely to facilities for the accommodation of the railroad's patrons. In the central unit is the main waiting room, which is 93 ft. 7 in. long and 52 ft. 9 in. wide, with seating space for 176 persons. The waiting room has a maximum ceiling height of 41 ft. 6 in., the ceiling being immediately below the girders which carry the fourth floor. Flanking the main waiting room on the east and west, respectively, are the entrance and exit concourses, both of which extend directly through the station to the outside concourse on the track side. A vestibule on the central axis of the building gives passengers direct access to the outer concourse from the main waiting room. Both the exit and entrance concourses are connected with the main waiting room by archways.

The barber shop, white men's toilet and the lunch room for white patrons are located in the west wing, adjoin-

View Looking West Showing the Station and Station Tracks

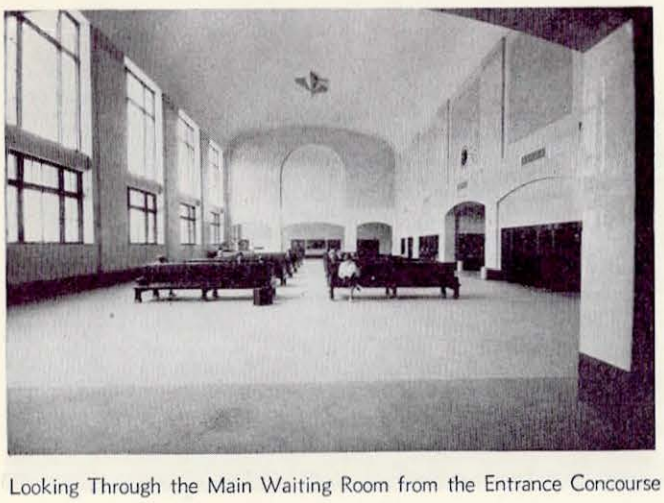
View of the Yard from the East End Showing the Coach Yard and Relocated Trainshed at the Right and the Station and Passenger Tracks at the Left



Plan of the New Passenger Terminal Facilities at Houston

ing the exit concourse. The remaining space on the ground floor of the west wing is occupied by the kitchen, refrigeration space, the dining car issues department and toilet facilities for employees. Along the north side of the main waiting room are located the waiting room and toilet for white women east of the vestibule and a drug store, news space and parcel checkroom west of the vestibule.

A separate waiting room and toilet facilities for negroes, together with a lunch room and kitchen, are situated in the east wing of the station, for which separate entrance and exit doorways are provided. Along the east side of the entrance concourse are the ticket agents' office, the ticket office, the information booth, the baggage check room and space for the stationmaster's office. With the exception of the ticket agent's and stationmaster's offices, these facilities are separated from the entrance concourse by an open counter, and also have a counter with windows along the opposite side, which adjoins the negro waiting room. At the extreme end of the east wing are situated the baggage room and office which are readily accessible from the street and also from the negro waiting room by means of a passageway. The receipt and delivery of baggage are made at the east end of the baggage room, where doorways and a narrow concrete platform are provided for this purpose. Copper-covered marquise, similar to that along the front of the station, are provided at the east end and also on the track side of the baggage room where doors of the overhead type are installed through which baggage is handled to and from trucks on a trucking platform.



Looking Through the Main Waiting Room from the Entrance Concourse

The second floor of the station occupies both wings and that area in the central portion that is not taken up by the main waiting room. This entire floor will be occupied by the offices of the Houston division of the Southern Pacific. The third floor is in two separate sections, 32 ft. 4 in. wide and 48 ft. 6 in. long, each flanking the main waiting room. These rooms may be used as assembly space and are adapted also for subdivision into offices if this becomes desirable. The fourth floor occupies only that space over the main waiting room and has similar dimensions. It is planned to utilize this space for the storage of permanent records of the railroad, as required by the Interstate Commerce Commission. Two stairways lead from the ground floor to the upper floors, one just to the right of the entrance to the entrance concourse and the other to the left of the exit concourse.

In general, the interior finish of the public rooms of the lower floor consists of marble or terrazo floors, marble or tile wainscots, and plaster walls and ceilings, with walnut trim. Elsewhere on this level the floors are of concrete and the walls and ceilings of plaster. The inside finish of the second and third floors is of standard office construction, with terrazo floors in the corridors, and terrazo or concrete floors elsewhere, hollow tile walls for the corridors, stairways and toilets, inside partitions of the movable unit type of oak and glazing, and oak trim. The interior of the dispatcher's office, which is on the second floor, is provided with sound insulation to exclude noise. The fourth floor will be left unfinished, although it will be provided with the facilities necessary for its intended use.

The station building has a partial basement under the dining room and kitchen and all service lines are carried in pipe tunnels under the building in order to make them readily accessible.

The heating system consists of concealed steam radiators except in the main waiting room, the dining room and certain other portions where a combination exhaust and forced draft system provides fresh air either through heating coils or an air conditioning device, as desired.

A concrete sidewalk 20 ft. wide extends the full length of the station on the street side, and the remainder of the area between the station and the extension of Franklin avenue has been converted into parking space, with a capacity of 350 vehicles. The entire area is paved with

concrete and is illuminated by eight lights on standards. Street car platforms are provided where the Washington avenue line has been relocated to pass in front of the station. Extensive paved trucking platforms are provided at the east end of the station and between the station and the track layout.

The track subway is constructed of waterproofed reinforced concrete and has a clear width of 20 ft. and a minimum height of 7 ft. 6 in. It serves all passenger train tracks with the exception of the track adjacent to the passenger station which is reached directly from the outside concourse. Ramps on a 10 per cent grade, also constructed of concrete, lead upward from the subway in each direction to each of the other platforms. The floor of the subway is 9.5 ft. below both the passenger station floor and the level of the platforms.

Layout Includes 21 Tracks

The new track layout comprises a total of 21 tracks, including 10 station tracks, 2 through tracks and 9 coach-yard tracks, the total combined length being 46,000 ft. The station tracks are served in pairs by five concrete platforms 21 ft. wide, which are at the level of the top of rail. These platforms are used also for the handling of baggage and mail, and crossings have been provided at each end of the platforms to permit continuous movement of trucks without interference with trains standing in the station. The layout of the platforms has been so arranged as to reduce the movement of the trucks to a minimum. All air, water and steam services for trains are located between the pairs of tracks where they will not obstruct traffic on the passenger platforms.

The passenger platforms are protected by butterfly-type sheds of steel frame construction, with roofs of matched wood sheathing. These sheds, of which there are five ranging in length from 340 ft. to 1,280 ft., are so arranged as to accommodate trains of the maximum length and to provide shelter for all passenger movements. They are of such width as to provide only sufficient openings between the sheds to accommodate locomotive stacks and provide for diffusion of the gases.

The Coach Yard

The coach repair yard, which is directly north of and parallel to the passenger train yard, provides sufficient track space, concrete platforms and other facilities for the making of running repairs to passenger cars, including Pullman and head-end equipment, and for cleaning railroad and Pullman-owned equipment. Air, water and battery-charging connections are provided for eight

The Outside Concourse. Looking West. The Ramp Leading to the Subway is Behind the Fence at the Right

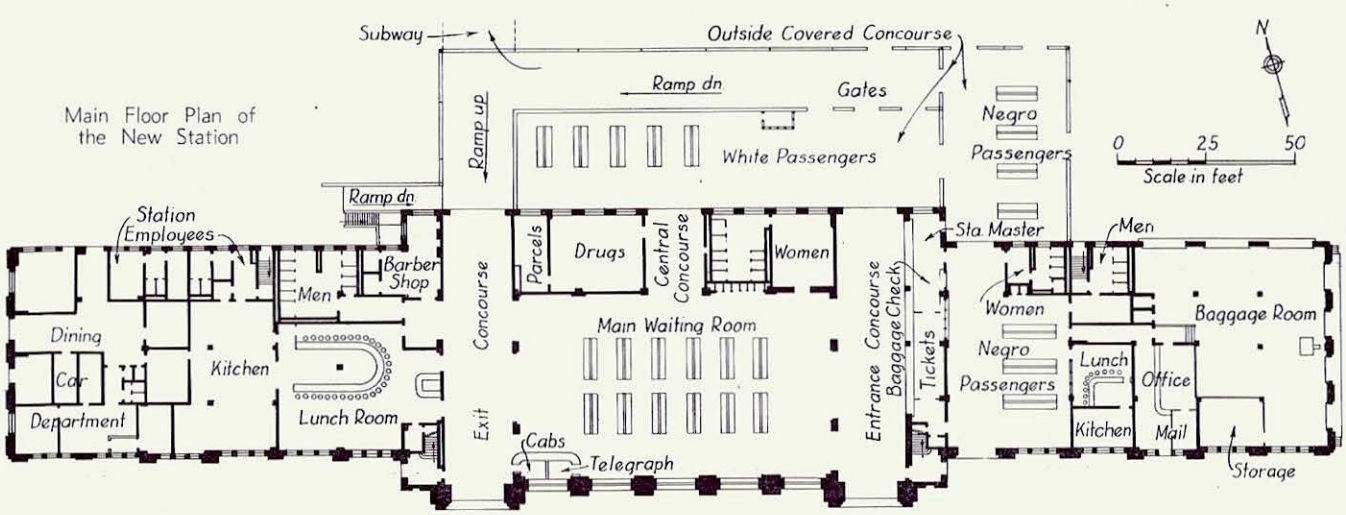
tracks, while the equipment includes a wheel drop pit, a jack for changing car wheels and a monorail hoist for handling wheels and other material. A concrete driveway and platform are provided around the outside of the coach yard to facilitate the handling of material and to make the area accessible to delivery services. The platforms of the coach and train yards are connected by cross walks of shell at each end and in the middle, the latter being overlaid with a mastic covering.

Arranged along the north side of the coach yard are the various utility buildings, some of which were constructed new while others were remodeled and moved from previous locations. The new buildings consist of a combination building 154 ft. by 28 ft., comprising store, toilet and locker room facilities, a power plant building, 46 ft. 10 in. by 31 ft. 1 in., and a small shelter for soil can cleaning.

All the new buildings are of one-story common brick construction, with concrete floors on an earth fill, except a portion of the powerhouse which is carried on piers. All have concrete roofs, plastered underneath, and partitions of brick or metal lath and plaster. Metal sash is used in the powerhouse while elsewhere sash is of wood. The soil can cleaning building is built to conform to federal regulations and also to the new standards for such buildings of the American Railway Association. A new ice-house has also been constructed.

Remodeled Buildings

Utility buildings that have been moved and remodeled include the Pullman building, the battery charging plant, the battery shop, a low and standard voltage substation, a gas compressor house, a telegraph repair shop,



and the section house. These buildings, which are largely of frame construction, have been supplied with concrete foundations and floors and otherwise repaired and remodeled to place them in good condition.

Steam for heating purposes is to be furnished by two 175-hp. locomotive type boilers with enlarged fire-box areas, which operate at a pressure of 150 lb. per sq. in. Oil is used as fuel and is stored in an underground tank adjacent to the power plant, which has a capacity of two cars. The boilers are completely equipped with automatic control and fuel saving devices.

Steam lines which deliver high pressure steam to the passenger station and train-yard are carried across the yards in a man-way or tunnel. The steam pressure is reduced to 10 lb. per sq. in. for building service by pressure-reducing and de-superheating equipment which is located adjacent to the station. The steam heating system in the passenger station is of the vacuum type with condensate return to the power plant.

Express Building Remodeled

The existing facilities of the Railway Express Agency, which are located somewhat west of the passenger station, have been remodeled and enlarged by the express company to harmonize with the appearance of the new station, at a cost of about $40,000. The express company recently moved its city office into the remodeled structure. The existing railway post office, which is situated between the station and the express building has not been disturbed.

In carrying forward the construction of the train and coach yards and accessory facilities, it was necessary to follow a definite sequence in order to avoid interference with train movements and the flow of traffic through the old station. The first major step in carrying out this part of the project was to remove existing buildings from the site of the proposed coach yard, bring the area to grade and lay the coach tracks, thereby permitting space to be vacated on which passenger train tracks and facilities sufficient to handle traffic temporarily could be constructed. Following this, the construction of the passenger subway was carried to completion in order to give access to the completed tracks from the old station during the construction of the remaining portion of the passenger yard adjoining the station.

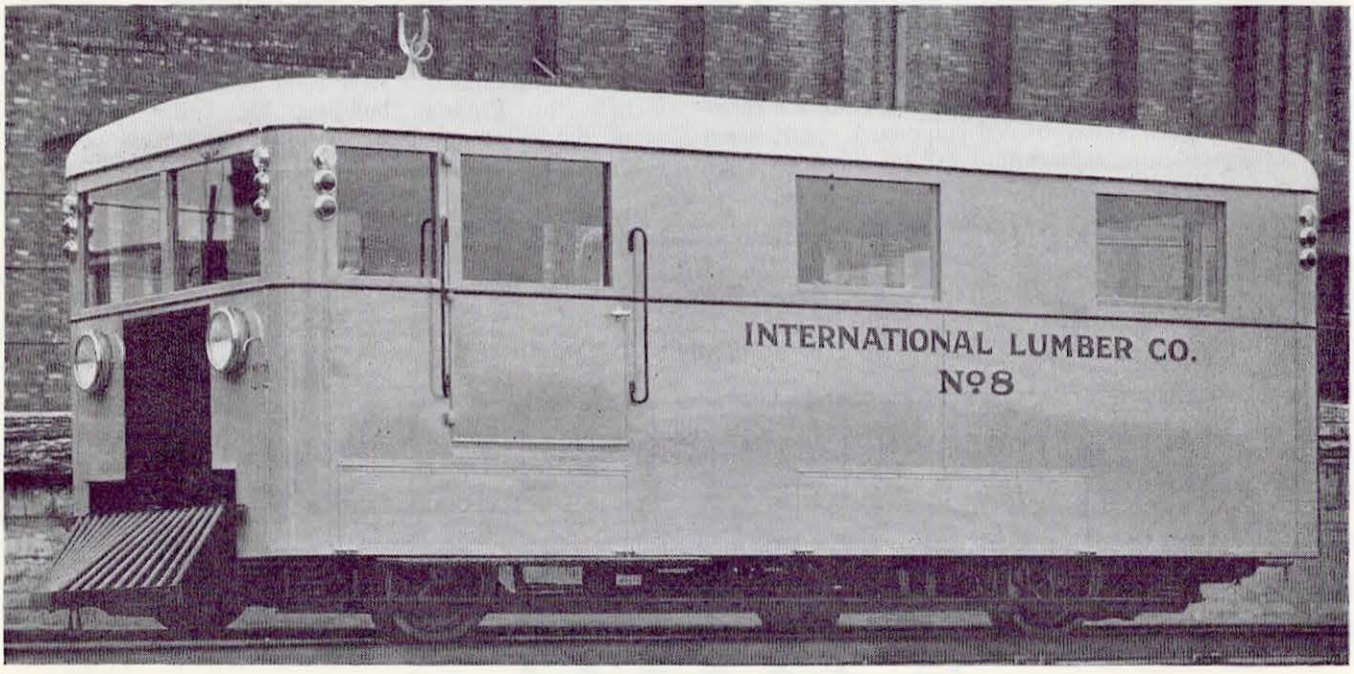
The design and construction of the entire project was carried out under the general supervision of R. W. Barnes, chief engineer of the Southern Pacific Lines in Texas and Louisiana, with N. V. Scott, resident engineer, in direct charge of the work. Wyatt C. Hedrick, Inc., Ft. Worth, Tex., was the architect for the station. The general contractor for the project was Nathan Wohlfeld, Dallas, Tex. Other contracts were held by the Wm. A. Smith Construction Company, Houston, for trackwork; by Jacobe Bros., Houston, for electrical work, and by the C. Wallace Plumbing Company, Dallas, for plumbing and heating.

New Fairmont Rail Car

THE International Lumber Company and the Minnesota, Dakota & Western Railway of International Falls, Minn., have in operation a gasoline motor coach which was designed and built by Fairmont Railway Motors, Inc., Fairmont, Minn. The coach makes daily 100- to 150-mile round trips in passenger and freight service for five logging camps, also accommodating local settlers. Designed for these conditions, it weighs 14,000 lb. empty and has a load capacity of 6,000 lb. Folding side seats clear the entire floor for freight when needed.

Westinghouse clasp-type air brakes, applied to demountable drums, with rigging on the outer side of the wheels, combine safety, accessibility and easy control. The chassis frame is rugged, being made of structural steel channels and angles held by bolts and heavy lock washers.

Smooth riding quality results from the use of large coil springs of special design, damped by two-way hydraulic shock absorbers. The heat-, gas- and noise-proof housing over the engine and silent operation of all gears and transmission parts make the car well suited to passenger or official inspection service.



Fairmont Rail Car Recently Placed in Service by the International Lumber Company and the Minnesota, Dakota & Western

Methods and Problems of Railway Supply Forces*

Separation from consumer control defended—Practices on Milwaukee outlined—Codes scored

By D. C. Curtis

Chief Purchasing Officer, Chicago, Milwaukee, St. Paul & Pacific, Chicago

WHY are a store department and a purchasing department necessary to a railroad? A section man wants a spike to hold the rail to the ties. The man wants an angle bar to connect two rails. He wants a bolt to fasten the angle bars to the rails. He must be provided with ties and rails, frogs, switches and guard rails. There are 1,600 sections with four or five men on each section on a railroad the size of the Chicago, Milwaukee, St. Paul & Pacific; they are all asking for these materials; they ask for them the day they want to use them and expect to have them in the hand-car house or on the hand car when wanted. The locomotive shop man wants a grate for an engine, a nozzle for an injector, a slide valve for a triple valve, a packing ring for a cylinder and all the other various pieces of material required for repairing a locomotive.

There are more than 50 of these shops repairing locomotives on a big railroad, located many hundreds of miles apart, employing hundreds of men and the individual needs and requirements of each one of these men must be supplied if the locomotives are to be repaired. To repair a car, a car man must have a coupler, a spring plank, a triple valve, lumber for the floor, different kinds of lumber for the roof and the sides of the car and hundreds of other items. There are hundreds of these individuals on hundreds of repair tracks, whose requirements must be taken care of by someone if the cars are to be repaired. A signal man needs a casting, a battery element, contact fingers for a relay; hundreds of other items are required for hundreds of signal maintainers scattered over thousands of miles of railroad. All this material must be supplied to them when they want it, where they want it. The same thing is true of bridge men, painters, electricians, surveyors, train men, station agents, accounting officers, etc.

72,000 Varieties

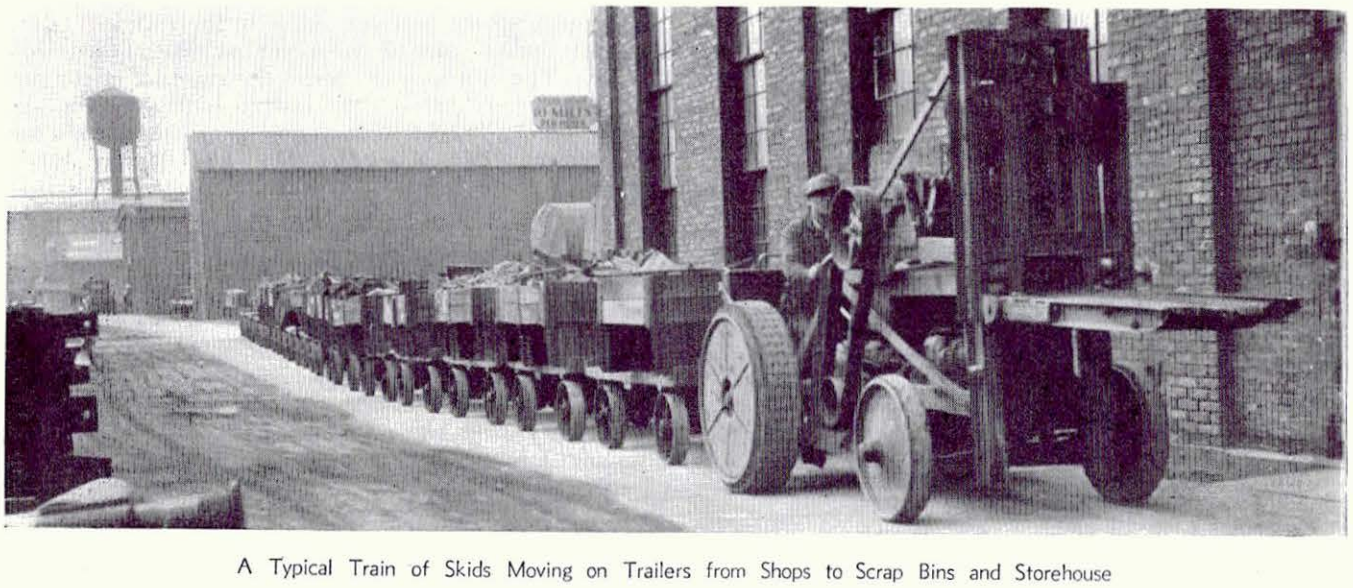
On the Milwaukee, more than 52,000 different items of stock material and 20,000 items of special material, or a total of over 72,000 different items of material must be carried not only at one point, but must be duplicated in some instances as many as 1,200 times in order to keep these men supplied with material so that they may make the necessary repairs, adjustments, additions, etc., to keep a railroad operating.

Some one or some organization must know what all of these materials are, where they are going to be required, the quantities they require, the length of time it takes to order, manufacture, ship to the main storehouses and then distribute them to the various places of use. This organization must determine the requirements at least 60 days before any one of the thousands of men enumerated above is ready to use a particular piece of material.

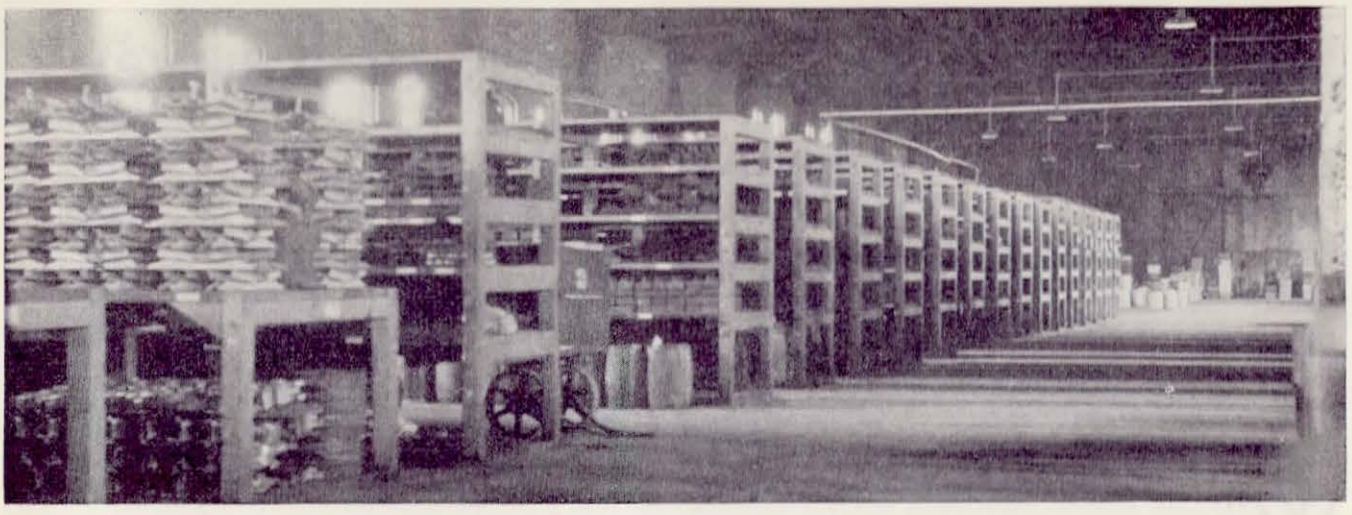
Organization Important

The stores organization on the Milwaukee is composed of a general storekeeper, an assistant general store-

* From an address before the American Transit Association, Cleveland, Ohio, on September 24, 1934.



A Typical Train of Skids Moving on Trailers from Shops to Scrap Bins and Storehouse



Open-Type Racks and Unit Piling in the Car Material Store at Milwaukee

keeper, a traveling storekeeper, several district storekeepers, several division storekeepers and many local storekeepers, with the necessary stockmen, store helpers and laborers; a purchasing agent, buyers, rate clerks, price clerks, material tracers, order writers, etc., to perform the thousands of detailed operations necessary in the procurement and distribution of the material.

After the storekeepers have prepared the necessary documents for ordering, it is necessary to have a purchasing department, and in a purchasing department buying the many thousands of different items, it requires a number of buyers to become acquainted with all the details necessary to obtain the best material, the lowest price and the quickest delivery.

The Purchases and Stores division of the American Railway Association has developed a book of rules, which explains all the detail necessary for the proper ordering, receiving and distributing of material on a railroad. The material is divided into a classification known as the Storekeepers' Classification of Material so arranged that as many classes may be used as desirable. The Milwaukee uses 61 classes, all the related items being put into one class. For instance, Class I includes frogs, switches, guard rails, etc.; Class XI, all sizes of bolts, nuts, rivets, etc. A stockman supervises one or more classes of material, depending upon the size of the storehouse and the amount of material carried.

Each stockman is provided with a stock book, one of which is compiled for each class of material. The items are arranged in numerical or alphabetical order in the stock book, giving full description for purchase orders and any additional information as to the different uses made of each item. Spaces are then provided for the quantity on hand, the quantity due, the quantity of unfilled orders and the quantity used the last 90 days. Space is also provided for entering the quantity ordered, together with the requisition number on which it is ordered, with sufficient space reserved to show the quantity of that particular item received on the various requisitions placed during the month.

Handling Scrap by Lift Truck at Milwaukee, Wis.

Show Prices on Orders

Forms are provided for writing the requisition, the purchase order, the receiving record and the invoice record at one time. On each requisition is shown the quantity on hand, the quantity due, the quantity of unfilled orders, the quantity used in the last 90 days, and the value of each item ordered, so that the stock man, the storekeeper and the general storekeeper, the purchasing agent and the chief purchasing officer, may have this information before them when handling the requisition. This requisition is sent to the general storekeeper for checking against surplus material at other points. Where none is available, it is approved by him and forwarded to the purchasing department for purchase. The purchasing department sends out the necessary inquiries, tabulates the bids and places the order for the material to the best advantage to the railroad. Material is always shipped, wherever possible, to a storekeeper. The storekeeper checks the material on proper receiving forms, matches the invoice with the receiving record, checks freight charges and approves the invoice for payment. The material is then available for distribution on properly-approved requisitions to the various users.

Storage Facilities

The housing of material requires many different facilities and a highly-trained personnel to see that each one of the thousands of items of material is in its proper place, that that place is known at all times so the personnel can obtain the material quickly and furnish it to the user with the minimum handling, crating, accounting, etc. In the Milwaukee's storehouses, material is segregated by classes and the storehouses are provided with the open-type shelves for the miscellaneous material and the material piled in units wherever possible to facilitate the taking of monthly inventory for

stock control. Some material is stored in the original packages on skids, to be handled with mechanical lift trucks. Some material is stored adjacent to where it can be used by the consumer with no handling. Some material has to be protected with special coatings, while other material requires special containers to prevent explosion and fires.

Often it becomes highly desirable to do a certain thing at a certain place, while these reasons do not apply at other places, making a different arrangement necessary. There are certain fundamental practices, however, such as open shelving in storehouses, lift trucks and containers that can be applied universally. Open shelving, or material racks with shelves without dividers or bins, is standard on the Milwaukee, by reason of which 15 to 20 per cent in space is saved, material can be better kept in order, and the policing for stock control is easier. Wherever practical, the material is unit-piled.

Mechanical Handling

Approximately 50,000 carloads of material are received and disbursed on the Milwaukee in a year for the use of the railroad. This suggests the importance of economical handling to control costs. For miscellaneous material skids are handled by power lift trucks at the larger stores and hand lift trucks at the smaller stores. At the larger stores, we use specially-designed trailers that hold two standard skids and are hauled by gasoline tractors. These tractors pull 25 or 30 trailers in a train, which are dispatched and handled like regular trains. Regular routes are laid out through the shops with stations provided, where necessary, to take care of the needs of the shops. At the more important stations, a power lift truck is stationed, which acts as a switch engine. The regular train sets out trailers with material at the various stations, the same as a train sets out cars on side tracks, and the material is then delivered by the lift truck exactly where it is to be used, the truck, in some cases, lifting the material into place.

Ship Material on Skids

Material is shipped from the main store in skids wherever possible; by which means it takes only one-half hour to one hour to load an 80,000-lb. capacity car with a lift truck and less time to unload it. A large part of the material shipped from one store to another is left in the skid until wanted and then delivered direct to the user by the lift truck. Material too heavy or bulky to be skidded is handled by a crane, a magnet, etc., wherever possible. The aim is to handle material just as few times as possible from manufacturer to user. Material requiring repairs is removed and replaced, so far as practicable, by similar material immediately. The good material that is used is delivered either in a skid or by crane and the old material returned to the storehouse and shops by the same method without "light mileage" in most cases.

Scrap Handling Watched

So-called "scrap" is a very important item on a railroad, fluctuating from $100,000 to $150,000 a month on a large railroad. The Purchases and Stores division of the A.R.A. studied the various uses of scrap and then made up a classification with 77 different classes that this scrap can be divided into and sold to much better advantage than by selling it mixed. Here again, system, supervision and co-operation make possible large savings. The Milwaukee places scrap by classification in the empty skids that were used for delivering usable material to the user and ships it back to the concentration point by the same mechanical means used in handling the good material, and at a low cost. With 10,000 to 20,000 tons of scrap to be handled per month, the possibilities of economies in the method of handling are evident.

Material does not move on a railroad with any degree of regularity. Because 10 items of a certain piece of material are used during September is no evidence that 10 will be used in October for the reason that the age, service, abuse, change in design of equipment, the season of the year, traffic density, etc., affecting the facility to be repaired make for a wide fluctuation in the quantities of the various items required. This fluctuation makes it necessary to carry a large amount of material.

To control the vast investment and to help keep it to a minimum, a report is prepared monthly which shows, in terms of dollars and cents, the amount on hand the first of the month, the amount received that month, the disbursements for the month and the amount on hand at the end of the month for each class of material and the total for all classes. The report also shows the number of days' supply on hand for each class, and the total. This report is made up for each operating division, as well as a total for all divisions.

It costs at least 15 per cent to carry material in stock on a large railroad, including interest, handling, housing, taxes, insurance, obsolescence, etc. Not the least of these is obsolescence and it is the hardest with which to cope. Many methods are used to control stock and keep the investment to a minimum, including master stock books, budget control, limitations on ordering, special inspection forces, etc.

Purchasing Problems

I have never seen a purchasing department overmanned, and it is an expensive place to try to practice economy by reducing forces. Even under codes, inquiries for prices must be sent out, replies tabulated, salesmen interviewed, quality investigated, ability to produce the goods when and where wanted known to a certainty, patent claims investigated and traffic value studied. If forces are reduced to a point where any of these transactions are eliminated or curtailed, higher prices will be paid, with resultant loss. After all the inquiries, tabulations, interviews, investigations, etc., possible have been made, the purchasing agent hopes that no mistake has been made serious enough for him to be sent to jail by some regulating body, or discharged for spending the company's money unnecessarily.

Stock items of material which are ordered by the store department with complete description are comparatively easy to procure, but so-called special items are what keep purchasing agents from growing old. It is very important to have the full description, specification, catalog reference where possible, the use of the material, and all information possible if the purchasing agent is to buy the material wanted.

Purchasing Under Codes

There are some 700 different codes now in effect. Each code authority expects the purchaser to give him an advantage which will secure the order. The purchasing agent had an easy time before codes were written for him to interpret and police. We are fast learning the meaning of "fair practice," "selling below cost," "price schedules," etc. How it is ever going to be possible to be conversant with all the descriptions, rules, regulations, rates, cost of haul on railroads, fair practice provisions, cost of productions, prices, etc., is a bewildering question.

The power of code authorities to vitiate at will contracts that are mutually satisfactory to both parties works

a great injustice to the contracting parties and is a potential evil of grave importance to industry. It does seem that the purchaser, the man who is spending his money, should at least be consulted and have an opportunity to voice what he considers his rights before being forced to sign on the dotted line. The vesting of legislative powers, backed by penalties to be enforced by constituted courts of law, in code authorities, committees and subcommittees of industry under the various codes, is loading with dynamite all sales agreements and contracts, and increasing costs ruinously.

Price Fixing Detrimental

We hear a great deal about "price fixing" both its benefits and its penalties. In my opinion, this is detrimental to both the seller and the buyer. It destroys much improvement and invention. It penalizes the consumer unnecessarily. It causes curtailed production, with resultant lessened employment. A corporation or an individual is limited in his expenditures by his assets. A railroad can only spend the amount of money it takes in and must divide this for taxes, labor, material and interest on borrowed moneys. Dividends are so small they are not mentioned.

If rails cost $37 a ton, one can buy 16 per cent more than if rails cost $43 a ton. The more tons, the more labor employed. If coal can be purchased for $1.70 a ton in place of $2 a ton, millions of dollars are made available for ties, tie plates, ballast, etc., without in any way lessening the labor required in the production of the coal.

There is no question but that a seller is entitled to a fair profit and must have it if he is to stay in business. However, if any seller can produce and sell his wares at a profit for a less price than his competitors, he should not be prevented from doing so by a mandate of law that provides a penalty of $500 a day and six months in jail for each day's violation.

Chiseler Finds Ways and Means to Chisel

I have no objection to industries getting together to agree on prices where they can do so with profit to themselves and benefits to the buyer, but there should be no law making this mandatory and preventing a buyer from making contracts, price agreements, etc., at lower prices where such lower prices give fair profits to the seller, benefit the buyer and make possible the use of invention, efficient management, natural resources, increased use and greater distribution. It is argued if it were not for mandatory laws, the chiseler would ruin legitimate industry. My observation is that the chiseler finds ways and means to chisel, law or no law, but that the self-respecting, law-abiding efficient seller is the one whose wings are clipped and his resourcefulness lost.

Necessity is rightfully called the mother of invention. The buyer with the necessity of not only conserving his company's resources, but making the available money buy enough material to meet the necessities of the property, has always before the seller the necessity of selling his products at the lowest cost and thereby constantly stimulating efforts of all kinds for lowest costs.

An efficient, well-organized store and purchasing department is a necessity on any large property. To have the full benefit of it, the department should report direct to the president. The president then has the check of all departments on the purchasing and store department and he has the check of the purchasing and store department on all the other departments, to prevent wasteful practices in the excessive use or abuse of materials. These checks are necessary on all large properties.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 6 totaled 631,318 cars, a decrease of 13,329 cars as compared with the preceding week, of 31,055 cars as compared with the corresponding week of last year, and only 6,229 cars above the loading for the corresponding week of 1932. Loading of merchandise and coke showed increases as compared with the week before, and live stock and coal showed increases as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, October 6, 1934

District	1934	1933	1932
Eastern	130,995	138,150	136,332
Allegheny	108,175	122,610	110,196
Pocahontas	43,781	42,881	44,823
Southern	88,638	90,714	93,274
Northwestern	97,681	104,909	81,104
Central Western	105,928	106,738	103,835
Southwestern	56,120	56,371	55,525
Total Western Districts	259,729	268,018	240,464
Total All Roads	631,318	662,373	625,089
Commodities			
Grain and Grain Products	31,734	31,914	36,023
Live Stock	29,735	22,466	22,565
Coal	117,457	113,575	132,951
Coke	5,874	7,084	4,979
Forest Products	22,336	25,403	18,411
Ore	19,266	37,213	6,645
Merchandise L.C.L.	164,990	174,720	179,297
Miscellaneous	239,926	249,998	224,218
October 6	631,318	662,373	625,089
September 29	644,647	669,186	621,658
September 22	643,120	659,866	595,604
September 15	645,986	660,086	587,246
September 8	562,730	577,933	501,537
Cumulative Total, 40 Weeks	23,940,117	22,277,053	21,597,781

Car Loading in Canada

Car loadings in Canada for the week ended October 6 totaled 53,050 cars, as against 53,198 cars last year and 50,547 cars for the previous week, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
October 6, 1934	53,050	18,832
September 29, 1934	50,547	19,306
September 22, 1934	51,610	19,495
October 7, 1933	53,198	19,544
Cumulative Totals for Canada:		
October 6, 1934	596,132	39,753
October 7, 1933	556,749	31,183
October 8, 1932	632,841	44,755

THE GOVERNMENT RAILWAY OF NIGERIA, one of Great Britain's African colonies, reported a deficit after interest charges of £246,668 for the year ending March 31, 1934. Gross revenues were £1,885,660 and operating expenses, £1,086,126, thus leaving a net revenue of £799,534. This latter was converted into the above-mentioned deficit after the adjustment for interest charges totaling £1,046,202. Not since the year ending March 31, 1930, has this railway reported a surplus after interest charges. The present report includes considerable comment on the competition of unregulated highway carriers, and pleads for a more equitable transportation set-up. Arguments in this latter connection are bolstered by quotations from reports of Federal Co-ordinator Joseph B. Eastman and from the recent American book, "The Transportation Crisis," by Professor G. Lloyd Wilson of the University of Pennsylvania.

Centralized Scientific Research

Unanimous agreement reached by joint committee appointed at request of Eastman

WASHINGTON, D. C.

ORGANIZATION by the railroads of a centralized scientific research department to serve the interests of all the railroads is recommended in a unanimous report to Co-ordinator Eastman by a joint committee appointed at his request by the Science Advisory Board of the National Research Council and the Regional Co-ordinating Committees of the railroads made public by Mr. Eastman on October 16. The report was accompanied by a statement by Mr. Eastman in which he said it was understood that plans are under way for the establishment of such a department as one of the branches of the new Association of American Railroads, which had included a Planning and Research Department in its set-up, and that "in the opinion of the Co-ordinator this will mark a very important step in the improvement of general railroad conditions, for the opportunities of beneficial research in improvement of equipment and facilities and of methods of operation and service which will be open to such a department are almost unlimited."

The report of the committee does not, however, go so far as to recommend the establishment of a centralized railroad research laboratory at this time, expressing the feeling that the safer, surer, less expensive and more orderly procedure is to let the question of such a laboratory develop in an orderly fashion through the experience and on the recommendation of the director and his staff and with the approval of whatever governing board may be established to administer the research organization. The committee also expressed the opinion that it would be a mistake to abandon contact with those institutions which are capable of rendering effective research service.

Would Enhance Value of Existing Agencies

It is the belief of the committee that a central organization can be organized in such a way as not to destroy any of the valuable agencies or contacts which now exist but that a properly organized central research organization will greatly enhance the value of many of the existing agencies.

On September 23, 1933, the Co-ordinator requested the Science Advisory Board to appoint a committee to study the matter of scientific research for the railroads in collaboration with a special committee of railroad executive officers and, if it thereafter seemed expedient, to formulate a plan for carrying on such research, to assist in the initiation of the project, and to advise in connection with its subsequent operation.

Such a committee was promptly appointed by the Science Advisory Board, and among its members were directors of scientific research carried on by some of the leading industries of the country. The Regional Co-ordinating Committees of the railroads followed suit by appointing a similar committee made up of distinguished railroad executives. The two organized as a joint committee on December 18, 1933, with Dr. Frank B. Jewett, vice-president of the American Telephone & Telegraph Co. and president of the Bell Telephone Laboratories, as chairman.

This report, after commending work which the railroads individually and co-operatively have in the past done in the way of scientific research, points out certain inherent weaknesses in the present organization of this work and the methods used, discusses the experience in such research of industry outside the railroad field, and reaches the conclusion "that substantial profit will inure to the railroads and to their continued development as the nation's major transportation facility if a way can be found to permit of establishing and maintaining a research organization competent to deal with the major material problems of common interest." The report also discusses the way in which a new research organization should be initiated, the qualifications which should be considered in choosing a director, the form of organization which should be adopted, the manner of budgeting and technical control which will produce the best results, and various incidental advantages which will flow from the new organization.

"The agreement which has thus been reached on this subject, by those who have had wide experience in scientific research in industry, outside the railroad field, and by representatives of the railroad industry, clears the way for the organization by the railroads of a centralized scientific research department which will be adequately staffed and will serve alike the interests of all the railroads, great and small," Mr. Eastman said.

Membership of the Joint Committee

The membership of the joint committee was:

For the railway executives: Daniel Willard, president, Baltimore & Ohio; W. W. Atterbury, president, Pennsylvania; (Col. C. D. Young, vice-president, Pennsylvania, alternate); Scott M. Loftin, receiver, Florida East Coast; Norman Call, president, Richmond, Fredericksburg & Potomac; C. E. Johnston, president, Kansas & Missouri Railway & Terminal Company; Charles Donnelly, president, Northern Pacific.

For the Science Advisory Board: Dr. Frank B. Jewett, vice-president, American Telephone & Telegraph Company, president, Bell Telephone Laboratories, Inc.; E. H. Colpitts, vice-president, Bell Telephone Laboratories, Inc., (alternate); Dr. Chas. F. Kettering, vice-president and director, General Motors Corporation; R. L. Lockwood, director, Section of Purchases, office of Federal Co-ordinator of Transportation; Dr. E. K. Bolton, chemical director, E. I. duPont de Nemours & Co.; Dr. John Johnston, director of research, United States Steel Corporation; Dr. Francis C. Frary, director of research, Aluminum Company of America; Prof. D. C. Jackson, head, department of electrical engineering, Massachusetts Institute of Technology; Dr. Harold G. Moulton, president, Brookings Institution; Dr. Isaiah Bowman, chairman, National Research Council; A. A. Potter, dean of engineering, Purdue University; and Maurice Holland, director, division of engineering and industrial research, National Research Council, secretary.

The report and recommendations were unanimously adopted at the final meeting of the joint committee held

at Bell Telephone Laboratories, New York, on September 26. All members of the joint committee were present except General Atterbury (represented at the meeting by Colonel Young), Mr. Loftin and Mr. Kettering. Approval of the report and recommendations was received in writing from these gentlemen.

A condensation of the report follows:

Report of the Joint Committee

At the January meeting of the joint committee it was decided to appoint a subcommittee made up of members from each group to consider in detail the research work which had been done and was now being done by the railroads in the field which Mr. Eastman had in mind when asking that the main committee be created. The subcommittee appointed consisted of: General W. W. Atterbury, Norman Call, Charles Donnelly, Dr. F. C. Frary, Dr. D. C. Jackson, Dr. John Johnston and Dr. F. B. Jewett, Ex-officio.

In order to facilitate the work of the subcommittee Mr. Gormley, president of the American Railway Association, undertook to collect and have put in form for presentation a comprehensive report of the various problems which had been or were being considered in the railroad field, together with a report on the forms of agency employed. Following the collection of the material Mr. Gormley invited the members of the subcommittee to a meeting in Washington at which were present a large number of officers of the American Railway Association, together with chairmen and members of numerous technical subcommittees. An entire day was spent in going over the material presented and in discussing the work in hand and the organizations and facilities which had been established for its conduct.

At the conclusion of the conference the subcommittee was furnished with a voluminous detailed record of the matters discussed. This record has been carefully studied by the subcommittee and while a large part of it is concerned with problems or with the details which are hardly germane to the principal policy question which Mr. Eastman propounded, it has been extremely helpful in formulating our conclusions and recommendations.

Questions To Be Answered

The questions raised by Mr. Eastman in his original letter and which the joint committee has been requested to study and answer are essentially questions involving broad policy in the field of scientific research for the railroads rather than details connected with the operation of scientific research. They comprehend the making of a survey to determine (a) what is now being done in the way of scientific research and development in the railway transportation field; (b) whether this and/or additional work could be better done to the greater advantage of the railroads under a different setup, and (c) if so, what form that different setup might take.

Past and Present Situation

As a result of our study and a consideration of the detailed material submitted to us through the A.R.A., it is clearly evident that the railroads individually and cooperatively have done and are doing a very large amount of technical work directed to a bettering of all the things which are involved in efficient railroad operation. While a large part of this work is essentially concerned with the engineering testing of new materials, equipments or methods that have been proposed, and so hardly comes under the designation of scientific research as it is commonly understood in industries which maintain regularly organized industrial research laboratories, a considerable part of the work is obviously of a research character. Some of such work now in hand and a great deal that has been done in the past is distinctly of a high order which has commanded the attention of able and experienced men. During the many years in which this type of work has been developing, numerous contacts have been made with universities and other institutions equipped to do certain kinds of fundamental investigational work and with commercial organizations which maintain substantial research departments. In the main these last contacts are with the research organizations of large industries concerned wholly or primarily with the supplying of materials or equipment to the railroads.

Whatever may be the final outcome of the present consideration, it seems clear that it would be a mistake to abandon contact with those institutions which are capable of rendering effective research service, at least until time and experience under any new arrangement which may be adopted has proven conclusively that a better way of handling some of the problems exists.

Some of the larger railroads have for a long time maintained laboratory organizations which in connection with the primary function of acting to control the quality of things furnished have undertaken primary research with a view to bettering the character of those things. Because of the vast variety of things involved on the material side of railroad operation, the difficulty of obtaining and maintaining adequate staffs and the very substantial cost of a thoroughly equipped research organization, it has been clearly out of the question for the smaller railroads to attempt anything of this kind.

In the main the majority of the railroads have been dependent upon the results obtained from the research work of outside organizations or the larger operating systems or from the cooperative investigations undertaken through the numerous technical committees of the A.R.A. and the A.R.E.A. Where these results were not directly applicable to the peculiar needs of an individual railroad such roads may have been forced to make modifications. Work antecedent to such modifications could hardly be classed in the nature of scientific research, however.

Eliminating the research and development work which has been done by suppliers engaged primarily in the furnishing of material and equipment to the railroads, undoubtedly the major part of scientific research and development on problems of common interest to the railroads is that which has been carried on under the auspices of the numerous technical committees which have been in existence for a great many years. Some of these technical committees have been organized through the national engineering societies, others through the general and engineering associations in the railroad field. While, as mentioned above, a great deal of the work undertaken under these auspices can hardly be designated as scientific research, being in the nature either of comprehensive accurate testing or what for want of a better name might be called engineering research, a considerable part has been scientific research and that of a high order.

In the main it is evident that the committees or groups interested in and responsible for the work in hand have sought to obtain either from the facilities of the railroads themselves or through contact with outside organizations, the best assistance possible. In some cases the results obtained could hardly have been improved upon; in other cases the human and material facilities available have not been adequate, and as regards certain major problems of common interest to all the railroads it is difficult to see how the problems could be successfully attacked under the circumstances which have existed.

Handicaps of the Present Setup

Without attempting a detailed analysis of the intricate setup of committees and organizations engaged in those phases of the railroad problem which are concerned with scientific research and development, it appears clear that this setup has certain inherent weaknesses when viewed from the standpoint of what would be most desirable if the railroads could be considered as a single unified whole. Primarily these weaknesses appear to reside in the fact that the committee form of direction and control is inefficient when applied to certain types of problem or to the more fundamental parts of certain problems, and in the further fact that many of the problems require for their proper solution the concentrated attention of specially trained personnel, which it is difficult to command through the committee organization scheme.

Generally it would appear that the numerous committees which have been organized to consider and work upon the different problems thought to be of common interest have been composed of men from the different railroads whose training and experience seemed to be such as to fit them for the work in hand. Largely from the very nature of the cases they have been men with wide engineering or operating experience rather than men trained primarily as research investigators. Also, because of the fact that committee service has been in most cases essentially an extraneous activity superimposed on a primary job, it has been difficult to insure maximum benefit of the capabilities of men otherwise qualified to direct or conduct fundamental research and development operations.

A further weakness in the committee scheme of handling this type of problem is the fact that general experience seems to show that committee decisions are almost invariably compromise decisions in which a wide diversity of factors, many of which may not be germane, are likely to enter. For many types of question compromise solutions arrived at in this manner are the best and frequently the only means of making progress. When dealing with the results of scientific research and development, however, it is only established fact or data interpreted by technically qualified experts that it is safe to rely on. Conclusions based on a majority vote of only partially qualified people,

or on an averaging of opinion, are more likely than not to bring about a wrong or inadequate result.

Experience of Industry Outside the Railroad Field

Outside of the railroad field numerous industries have found it advantageous to establish and maintain well equipped industrial research laboratories or organizations distinct from control laboratories or general engineering staffs to cope with the more fundamental problems of the industry. While these research laboratories or organizations vary greatly in detail and in the manner in which they are tied in to the other parts of the industry, they have one thing in common. This is the fact that they are staffed by men who have been thoroughly trained in the basic sciences and who are experts in the matter of attacking problems from the scientific point of view and with all the techniques which science has made available. Further, the laboratory equipment with which they work is equipment designed specifically for research rather than for general operation or for laboratory control use.

These common characteristics are to be found in all modern industrial research organizations irrespective of whether those organizations are integral parts of individual companies or are groups maintained cooperatively or through trade organizations. Their common existence is predicated on the realization that successful handling of the increasingly complex technical problems presented to industry through an expanding science demands the attention of specifically qualified experts equipped with special tools. Such problems cannot be handled effectively, if at all, by unqualified or only partially qualified people no matter how expert they may be in some other field.

Organization of scientific research and development in industry in the highly specialized way and with the highly specialized personnel just indicated does not mean that the research and development department is the dictator of policy or the part of the whole organization which determines what shall be done or when. It is primarily a department organized, staffed and equipped to solve effectively the more difficult problems involved in the practical applications of science. The results of this work obtained through the best possible use of specialized human and material facilities are the raw materials with which the engineering and operating departments function.

In many of the larger industries outside the railroad field well organized research departments have been maintained and developed over a long period of time and have come to be regarded as essential cornerstones in the industrial structure without which the industry could not develop effectively or take full advantage of new scientific knowledge.

Opportunity for Organized Scientific Research in the Railroad Field

After carefully reviewing the existing situation in the railroad field and considering the experience of industries which maintain research departments, it is our belief that substantial profit will inure to the railroads and to their continued development as the nation's major transportation facility if a way can be found to permit of establishing and maintaining a research organization competent to deal with the major material problems of common interest. It is likewise our belief that if a way can be found to establish and maintain such a central organization it can be organized so as not to *destroy any* of the valuable agencies or contacts which now exist. On the contrary, it is our belief that a properly organized central research organization will *greatly enhance* the value of many, if not all, of the existing agencies by providing a thoroughly qualified corps of scientifically trained people properly equipped, to whom the railroads as a whole and the various technical agencies can look with assurance for authentic data on which to base whatever engineering, operating or policy decision it may apply to. It is our feeling that such an organization will likewise tend to stimulate individual initiative throughout the entire railway personnel.

It is not our thought that a central research organization, if established, should attempt to concern itself with the vast multitude of applicational problems which exist in the transportation field. The mere number and variety of these problems and the variations in many of them which exist among the several railroads would seem to preclude any such objective. Rather, the central research organization should in our judgment concern itself with the more important fundamental problems of common interest, to the end that the various railroads or technical committees or the railroad associations could proceed to the solution of specific problems with a maximum of assurance that they were starting from a base of sound scientific fact.

If such a central research organization as we have in mind can be established it is essential that its relationship to the individual railroads and to the numerous technical committees and agencies be such as to insure the maximum of cooperation and a more or less automatic reference to the research organization of those problems which are peculiarly in its province.

For certain types of problem which are of common concern to all the railroads and to the suppliers of material or equipment for the railroads, the establishment of a properly staffed and equipped central research organization seems to us practically the only feasible way of insuring solution in any reasonable time or at any reasonable expense.

An example of this type of problem is the so-called transverse rail fissure which has so frequently been mentioned in our discussions. Whatever may be the primary cause or causes which lead to the production of transverse fissures, it seems clear that they are involved with the intricacies of chemical composition, molecular structure, the effects of treatment during the processes of manufacture, and conditions of employment under service operation. If this troublesome, expensive and dangerous difficulty is to be coped with and eliminated it seems obviously to require effective cooperation of a high order between the research departments of the railroads and the rail manufacturers. Being a problem of great complexity involving factors which lie at the borders of scientific knowledge, it is not one likely to be solved by crude engineering experimentation.

Other problems of common interest, whose proper solution involves questions of a fundamental research character, which call for the type of consideration that a research organization would give, are those relating to the prospective use of the various high tensile strength light weight alloys and steels; many of the problems involved in the possibility of improving the effectiveness of existing motive power or in the substitution therefor of some one of the many forms of internal combustion engine, and a large number of others.

Initiation of Research Organization

While we have discussed some of the various ways in which a research organization might be established, if decided upon, including what might be involved in the direction of creating at once within the framework of the railroad structure the beginnings of a research and development laboratory, it is our feeling that the question of a laboratory itself should be held in abeyance for the time being.

If it is finally agreed that a program looking to the ultimate establishment by and for the railroads, of a central research organization to handle fundamental scientific problems of common interest, is desirable, it is our feeling that the initial step should be the selection of the most competent man who can be found to act as director. Following this selection and with the assistance of the director himself, the selection of a limited number of highly qualified men to act as principal assistants and heads of the major departments of research investigation with which the research organization will be concerned.

A primary consideration in the choice of this initial group should be established competence as research men.

With this initial group formed it is our recommendation that the director and his assistants proceed to study in intimate fashion the agencies which are at present available for research and development work and to select a limited number of the more important problems of common concern whose solution demands organized research attack.

It is our judgment that initially such problems as are decided upon should be undertaken so far as may be feasible through employment of such of the existing facilities as appear competent, or by use of such additional existing facilities as may be developed. Unquestionably as time goes on and experience is had the exact needs for a laboratory owned and controlled by the research organization of the railroads will develop either as a supplement to or substitute for existing outside agencies. To attempt the establishment of such a laboratory as a first step would, however, be more likely than not to involve considerable expense, some of which might be found later to be money expended in unwarranted directions.

It is our feeling that the safer, surer, less expensive and more orderly procedure is to let the question of a centralized railroad research laboratory develop in orderly fashion through the experience and on the recommendation of the director and his staff and with the approval of whatever governing board may be established to administer the research organization.

Character of Director

The character, experience and point of view of the man chosen to be director of the research and development organization is by all odds the most important factor in the successful establishment of a centralized research and development organization. Primarily of course he should be a man of broad training in or understanding of fundamental science, of the possibilities and dangers which reside in the continual accession of new scientific

knowledge, and of the requirements antecedent to the successful handling of research problems. He should be a man who has given proof of his ability to organize cooperative work, since cooperation is the sine qua non of success in the modern industrial research organization, and of his ability to judge and select men for particular tasks and to organize them effectively.

While these are the primary requirements to be looked for in the director, a scarcely, if at all, less important factor in the success of the undertaking is, if possible, to find these characteristics in a man already well acquainted with the problems of rail transportation, and, if possible also, in a man who has already established himself in the confidence of the railway people. While it may not be possible to find such a man, it is clear that anyone, no matter how competent, who is chosen for the directorship and who comes to the task wholly unacquainted with railroad problems and essentially unknown in the railroad field, will have a harder time in developing an efficient organization and making its work properly available than one not so handicapped.

Although familiarity with existing railroad problems and established acquaintanceship with railroad people would be desirable in the principal technical assistants to the director, it seems to us doubtful whether these men can all be obtained from within the railroad personnel. In the case of these men it is imperative that they be selected on the basis of technical competence, even at the expense of some lack of acquaintance with existing problems or some lack of acquaintance with railroad personnel.

Form and Organization of a Research Department

A survey of the forms of organization which have been adopted by industries maintaining research and development departments shows wide diversity. In some cases the organizations and laboratories are operated under a director who reports to the chief executive officer or to one of his immediate assistants. In other cases the director reports to an officer farther removed from the chief executive. In some cases the director of research and development is a part of the executive management of the industry. In a few cases, notably among the larger industries in which the research and development function has attained to large proportions over a long period of time, industry has found it advantageous to organize this function as a distinct subsidiary with the ordinary corporate form of control, that is, with a board of directors and with the director of research and development having the title of president of the research and development corporation.

In considering the various possible ways in which a centralized research and development organization for the railroads might be set up it seems to us that one of two forms of organization might be adopted—

(a) The organization might take the form of a committee of one of the existing associations of which all of the railroads are members. Under such a set-up the director of research and development would be in effect the chairman of this committee and would report to the executive officer or executive board of the association.

(b) It might be organized as a separate non-profit-making corporation in which the railroads were the stockholders and managed by a board of directors elected by these stockholders. With such an arrangement the director of research and development would be the president of the research corporation and might or might not be the chairman of the board of directors.

Under either form of setup funds for the general support of the research organization and the conduct of all work of general interest to the railroads as a whole could be provided by an equitable annual levy assessed in some agreed upon manner. Under either form of organization provision would doubtless sooner or later have to be made for the handling of problems of peculiar interest to one or more of the railroads but not to all, and for the billing of expense of such problems to those directly interested. In many ways it seems to us that the corporate form of organization for the handling of research and development in the railroad field as it exists in this country may be preferable. However, the exact form of organization is of somewhat secondary importance.

Budgetary Control and Continuity of Financial Support

Under whatever form of organization the cooperative research and development establishment may be set up, budgetary control of expenditures on an annual basis would appear necessary. Under such control the general magnitude of operations would be established annually. Sufficient latitude would have to be allowed the director within the structure of the overall budget to make modifications in the details of activity. In research and development work more than in many other lines of activity new conditions may arise at any time which indicate the desirability of increasing or decreasing current activity on projects.

In setting up and maintaining a research and development organization and in establishing the basis on which to finance the work, there are two things which it is imperative to keep clearly in mind. One is that from the very nature of the work it is concerned with conditions of the future, and in the second place effectiveness of operation requires that the operating force *shall not* be subject to violent fluctuations. The more fundamental are the problems in hand the longer ahead must the look be taken when considering financial support. As to fluctuations in personnel, it must be remembered that with an underlying basis of inherent scientific ability the principal factor in effective operation of a research and development organization is in the experience of the staff and in the smoothness with which it can function as a team. Being essentially an intellectual process, constructive research and development work does not admit of a rapidly changing personnel such as may be tolerated in operations which are largely involved with limited skills.

Too great stress cannot be laid on the fact that maximum benefit from such an organization can only be anticipated after a number of years of orderly operation.

It is our feeling that since rail transportation is a permanent industry which must be concerned with the long look ahead, it is inherently a type of industry where organized research and development for common benefit can be established to maximum advantage.

Technical Control

While the executive management of a railroad association or the board of directors of the research corporation, if it is decided to organize in that way, could control the overall operational function with the total amount of money allocated for its expenses, they would not in all probability be properly equipped for technical control. Such technical control, at least in an advisory way, is both desirable and essential if the research organization is to function to maximum advantage.

It is our feeling that the existing technical committees and others which may from time to time be established, and the engineering and technical staffs of the individual railroads, will provide the basis for organizing effectively the necessary cooperation. It would of course be futile to attempt at this juncture to set up in detail the basis of such cooperation but we do believe that if the functions and responsibilities of a central research and development organization are clearly defined there should be no difficulty in relating it to the existing situation without destruction of any agencies of value which now exist.

Ancillary Advantages of a Central Research and Development Organization

In addition to the direct advantages which we think will inhere in the establishment of a central cooperative research and development organization supported by all the railroads with all participating in the results, there would appear to us to be certain ancillary advantages which might develop.

Mention has already been made of existing contacts with universities and with industrial organizations outside the railroad operating field which maintain research departments. It is assumed that these contacts will be continued. There are in addition numerous large industrial research laboratories operating in specialized fields with which the railroads have in the past had little or no contact. Many of these laboratories are equipped to handle more efficiently than a railroad research organization itself could hope to do certain problems of common interest to the railroads. It is our belief that if the railroads as a whole can find a way to establish a central research and development organization the facilities of many of these research organizations could be made available to the railroads and so obviate the necessity of incurring the expense of attempting independent handling.

The reason for this belief is the fact that in the past industries with this type of research department, which have business relations with many railroads, have been reluctant to undertake research and development work for individual railroads. This is not because of any desire to hamper the railroads but because of the possible embarrassments which might thereby be engendered with other railroads. It is our thought that if a central organization operating in behalf of all the railroads could be established, part at least of this existing obstacle could be removed and the area of assistance to the railroads in research and development thereby extended.

Conclusion

While we realize that the foregoing statement does not touch in detail the vast amount of material which has been submitted to us, it will we hope serve to aid those responsible for the management and advancement of the railroads—the primary transportation agency of the nation.

Illinois Central Rehabilitates Its Passenger Equipment

(*Continued from page 467*)

practically like wall paper to existing straight or curved surfaces, giving the effect of beautiful wood finishes.

The first group of two similar lounge cars is provided with an interior color scheme of gray-blue, dark apricot, henna and mulberry. The walls are finished in avodire Flexwood, with soft Van Dyke stain and lacquered. The carpet, made by the Olson Rug Company, Chicago, is a reproduction of an old English hook rug, created especially for this group and featuring a henna-apricot field. The furniture, made of maple with a knotty-pine finish, is upholstered in gray-blue, dark apricot, henna and mulberry leathers. The trim of all furniture is in a new antique bone, with a gray oyster white as a base.

The buffet walls are finished in knotty pine. The type of Venetian blinds used is a new development, with all draw cords eliminated and embodying a rattle-proof feature. The finish is not a stain or paint, but is rolled in with great pressure, the pigment being forced down into the wood. The edges are also rolled under pressure. It requires 10 weeks to kiln-dry this lumber and, from the stock that comes out, only 40 per cent may be used.

The second group of cars has the lounge end done in lacewood, with a color scheme worked out in gray-blue, rust, dark apricot and old gold. The buffet walls are done in knotty aspen, the balance of these cars carrying out the same treatment as in the first two.

The third group of two cars utilizes a unique color treatment. The lounge sections are done in harewood, with a scheme of gray-blue, burgundy and henna. The buffets are done in flat-cut prima-vera with the same general pattern and scheme as the other groups.

The rare wood finishes used in these cars include avodire, from the Ivory Coast north of the Gulf of Guinea; knotty pine, from the northern United States; lacewood, from Australia; knotty aspen, a European species of silver or white poplar; English harewood, from the British Isles; and prima-vera, from the tropics.

In addition to other modern features designed to appeal to the traveling public, each lounge car is equipped with a General Electric radio mounted at the service bar within easy reach of the attendant and having two loud speakers, one in the bulkhead at each end of the car.

* * *

On the Central of New Jersey near Cranford, N. J.

Communications . . .

What About the Stockholders?

Ohio

To the Editor:

It would be interesting to know who are the present owners of the railroad bonds in the United States.

How many such bondholders are there?

Who owns the preferred stock and who owns the common stock?

How many of these holders are depending upon the dividends from such holdings for a living?

It would also be interesting to know how much the "New Deal" has distributed to stockholders of the railroads and all utilities in the same manner that they have distributed money to the farmers for not growing wheat, corn, cotton and little pigs? I feel quite certain that a distribution of the taxpayers' money to railroad shareholders who have not received any dividends for five years or more would be very gratefully received and maybe would help out so far as votes are concerned.

If you would answer this questionnaire through your paper, it would surely be appreciated. However, being connected in a humble way with a railroad, I would not like my name used.

A. Railroader

Pension Records — Keep Down The Costs

Bangor, Maine

To the Editor:

In all the recent developments of railway investigations, legislation, etc., it is claimed that discoveries of means for effecting economies of various kinds are of prime importance, both from the standpoint of the government and the railroads. I wish to offer a suggestion as to how the science of figures may be practically applied so as to effect a huge saving if only those in authority could be prevailed upon for once to overlook a technical exactitude that amounts to nothing from a practical standpoint.

We do not as yet know just what system of records as to employee earnings and pension deductions is going to be put into effect by the Railroad Retirement Board, but I venture to say that a double record is contemplated. That is, both the amount of earnings and pension deductions for each employee will be carried along currently on some form of record or other.

Now from a practical standpoint I see no need of any record other than that of the amount of the deductions and the rate percent of the same, for all that is then necessary in order to determine earnings is to divide the amount of the deduction by the rate percent and multiply by one hundred. Thus, at the present rate for deductions, if at the end of a year it is shown that we have deducted from John Smith's pay the amount of $38.62 as his contribution to the pension fund, his earnings for the year amounts to $1931.00. To be sure, we might find by taking his exact wage for each payroll period that he was actually paid $1931.07 or $1930.98, but is that small difference, even though it might occur every year for thirty or forty years, with practically no effect in arriving at a pension rate or the amount of an income tax, worth the expenditure of millions of dollars of railroad or pension fund money, simply in order to be able to say exactly to a cent just what the amount of earnings was? Is the necessity of knowing exactly the amount in every instance so great as to justify such an expenditure?

Possibly this point has been considered, but if not, I should think that it would be entirely proper for those who are dealing with pension matters to at least present it for discussion. There is certainly a chance for a tremendous saving for somebody in the cost of handling these records, simply by being willing to accep' the results obtained by the application of a simple mathematical formula that will produce more than 99.99 per cent accuracy.

W. A. Randall

Odds and Ends . . .

Street Cars in Train Shed Roof

One of the amazing sights that greets visitors to A Century of Progress Exposition arriving at the Illinois Central station in Chicago is street cars running just under the eaves of the train shed. These are cars running on a viaduct, which, to reach the north gate of the exposition, had to be built through the train shed.

Offers Combination to Safe Crackers

The Nescopeck station of the Pennsylvania, located as it is in an isolated spot, has been the target for so many robberies in the past that the station agent, George H. Moore, has made a plea to any burglar who may enter the station for the purpose of plying his trade. A sign on the door of the safe reads as follows: "This safe never contains more than $5. Don't break it open. If you want the combination, call telephone No. 324 or 663-J."

Asks Cash Back on Rail Ticket Bought in 1870

In 1870, Mr. John Watt of Auburndale, Mass., bought a railroad ticket in Chicago for passage between Detroit, Mich., and Boston, Mass., on the Grand Trunk. The ticket, he was told, was good "until used." The other day, according to the Chicago office of the Canadian National-Grand Trunk railways, Mr. Watt finally decided he didn't want to use his ticket. It was forwarded to the general offices in Montreal, Que., with a request from Mr. Watt that the railroad give him his money back.

George Tatro—Fighter

George Tatro, aged 65, who has been running engines for the Elgin, Joliet & Eastern for a long time now, likes his pipe and his slippers. He also likes to play with his grandchildren when he is off duty. George is as peaceable a man as you'd care to meet, but anyone around Elgin can tell you that it isn't safe to rile him. This truth, long known to his friends, was impressed quite forcibly on two separate groups of tough strangers who tried to impose on George recently.

About a week ago George was seated in his parked automobile when another car ran into it. George's language caused the occupants of the other car, three young men, to invite him to step out and fight. George stepped out without further invitation, and, on seeing the width of his shoulders, one of the young men fled. George seized the two others by the neck and gently but firmly bounced their heads together until they announced they had more than enough.

A few days later, four Chicago gangster convicts, all armed, made a jail break and approached George's locomotive with the idea of commandeering it for their escape. George had quite other ideas, and, armed with a splice bar, he stood off the four of them until the prison guards arrived, to take them, not back to jail, but to a hospital, for George had been really angry this time.

"I'm getting to be an old man," was George's comment, when interviewed. "If I was as spry as I used to be, I wouldn't have needed that splice bar."

Smallest Passenger Ever Handled

A baby boy who weighs only 2¼ lb. arrived in Chicago on the Twentieth Century Limited recently in a specially oxygenized drawing room. The baby is Emanuel San Filipo, born on August 7 to Mrs. Biaggo Filipo on a Hammonton, N. J., farm. Weighing only 19 oz. at birth, the baby was taken on August 8 to a baby incubator in Atlantic City operated by Dr. M. A. Couney, who also operated an incubator at Coney Island and the one at A Century of Progress. The Atlantic City and Coney Island incubators, however, are being closed, for all the babies except Emanuel have outgrown them. So Emanuel was brought to the World's Fair incubator. A portable incubator, plugged into a light socket in a special compartment flooded with oxygen, was his home for the 1,000-mile railway trip. A special incubator ambulance met him at the train. An oxygen cubicle received him at the Fair.

Prize Winning Chorus Sings at Ford Gardens

Because of its victory in the Chicago Musicland Festival, in which it won first place in the men's choral-division, the famous Baltimore & Ohio Glee Club of Baltimore was selected to sing a series of six concerts at the Ford Exposition at A Century of Progress on September 22 and 23. The Ford Motor Co. offered the engagement to the winning chorus a week before the Chicagoland contest took place, with the result that the offer was automatically presented to the B. & O. songsters when their victory was announced. The choir, only a part of which is pictured herewith, numbered 70 singers in its Ford Exposition appearances, and came from Baltimore by special train, especially for the week-end.

The Silver-Tongued Railroaders at the Fair

NEWS

Big Shakeup Proposed for Ontario's Railway

Investigator for new government urges large-scale dismissals, drastic economies

Drastic economies, estimated to total over $500,000 annually, a complete reorganization of the system and many changes in personnel are recommended in the report of Armand Racine, a lawyer of Windsor, Ontario, who was appointed by the new Liberal Government in Ontario to investigate the administration of the Temiskaming & Northern Ontario, the railway owned and operated by the Ontario Government between North Bay and James Bay and serving the rich mining region.

Following are the highlights of the report, although the recommendations may not all necessarily be adopted by the Hepburn Cabinet:

That members of the commission serve without remuneration.

That Chairman George Lee be retired with pension and that a freight soliciting department be established with Mr. Lee considered as head at a salary not to exceed $2,500 a year.

That a general manager, not a member of the commission, be appointed.

That a survey be made to reorganize personnel and operation.

That the private car, Whitney, be sold or used as a business car.

That all passes be cancelled November 1, except those allowed by the Dominion Railway Board.

That an immediate audit of the road be made as of October 1, 1934.

That the services of certain officers and employees (mentioned by name) and including the auditor, the chief of the wage bureau, the purchasing agent, the general freight and passenger agent and an assistant superintendent be dispensed with.

That all contracts be awarded only after bids have been properly called for.

That work on basis of 39½ hours a week be started to make needed repairs to rolling stock.

That survey of all branch lines be made to determine if they are paying.

That service from Cochrane to Moosonee be reduced to minimum; that freight service be operated from Cochrane to Abitibi Canyon only as, if and when required, and from Abitibi Canyon to Moosonee by gas motor six months of the year.

That James Bay Inn be closed and either salvaged by wrecking or turned over to some charitable organization.

That operation of greenhouse at Englehart be discontinued.

That second wage reduction of 5 per cent be imposed on members of office and advisory staff who have not yet received it.

That bid of the Weaver Coal Company be rejected and new bids called for.

That possibility of reducing annual cost of coal, amounting to more than $600,000, be considered through "self-contained steam powered coaches with trailers."

That a chartered accountant be employed as treasurer and chief accountant.

That pending general survey, all members of office and advisory staff be requested to tender resignations, to be dealt with as decided upon.

That departments of audit and payroll accountant and paymaster be combined.

That operation of the electric line of the Nipissing Central between New Liskeard and Cobalt be discontinued, and battery cars be used on steam railway tracks to supply passenger service if necessary.

The findings of the report upon which the above recommendations were based were in part as follows:

The Abitibi-Moosonee extension was not justified, for no profitable traffic could have been anticipated.

Condemnation of acts of the commissioners in permitting certain contracts for construction to be granted to H. F. McLean, Ltd., without bids being called for.

The engineering department was "peculiarly lax" in preparing specifications for bids which led to granting of two contracts to McLean Company.

There is "no sound reason" for existence of James Bay Inn.

The commissioners have been lax and negligent in performance of their duties and did not know exact financial position of the road.

Attitude of the commissioners in condoning the practice of permitting the publication annually of a financial statement that did not represent the true position of a railway "is to be condemned."

Actual deficit of the railway as of October 31, 1933, was $9,018,211.07.

The chairman and other operating heads lacked necessary qualifications.

There was general overstaffing of the railway.

Bonuses were paid to operating heads without proper authorization.

Railway ties at cost of $1,695,879.25 were purchased during past 10 years without bids being called for.

No satisfactory explanation was offered for payment of $29,000 to cover international exchange in contract with Weaver Coal Company.

The economies proposed by Mr. Racine are estimated as follows:

Curtailment of service on Cochrane to Moosonee extension, $114,169.

Closing of James Bay Inn, $10,000.

Discontinuing operation of Nipissing Central Electric Railway, $11,274.

Closing Englehart greenhouse, $6,788.

Increased revenue by reason of cancellation of passes, $40,000.

Salaries of members of commission, $19,400.

Five percent reduction in salaries paid to members of office staff, $29,161.

Pensioning of employees recommended, $17,856.

Estimated reduction in personnel and services, based on survey and study of other railways, $254,964.

Discontinuing operation of car, Whitney, $7,000.

Total, $507,613.

Extension of Free Lighterage in N. Y. Area; Loading Charge Proposed

Railroads serving New York have filed tariffs, to become effective November 13, extending the free lighterage limits of that port area to include certain additional New Jersey points, the carriers having elected this alternative as the means of complying with the order of the Interstate Commerce Commission in connection with its finding of discrimination against these points when its decision in the New Jersey lighterage case was issued in August.

The railroads also propose to assess a charge of 50 cents a ton on lighterage freight when the loading and unloading to or from lighters or car floats at lighterage delivery points in New York harbor is performed by the carriers, the shipper or receiver retaining the option of loading or unloading at his own expense.

Highway Users Opposing Federal Motor Regulation

Committee so advised President at a White House conference on October 17

Proposed legislation for the co-ordination of transportation agencies was the subject of a conference at the White House on October 17 at which a committee representing truck and bus operators, shippers and farmers advised President Roosevelt against federal regulation of interstate motor transport at this time. The committee spoke for the National Highway Users Conference, and consisted of the following: Herbert P. Sheets, president of the National Retailers' Council; Chester Gray, Washington representative of the American Farm Bureau Federation; Fred Brenckman, Washington representative of the National Grange; Arthur M. Hill, president of the National Association of Motor Bus Operators; Ted V. Rodgers, Scranton, Pa., president of the American Trucking Associations, Inc., and Roy F. Britton, director of the National Highway Users Conference. In addition to their verbal presentation, the spokesmen for the conference submitted a brief including the following contentions:

1. That interstate motor transport is now subject to code regulation, that great progress is being made in the elimination of improper practices and unfair competition, and that hurried federal legislation would destroy the benefits and prevent the accumulation of experience and data which could be made the basis of intelligent legislation, if found necessary in the future.

2. That restrictive legislation would adversely affect employment, since there are today more than one million people employed in "for hire" bus and truck operations, or substantially as many as are employed by the railroads; and that the actual return to the railroads of the small volume of "so-called lost business" would not increase railroad employment, the records showing that they actually decreased employment by 10.53 per cent during the heavy business period of 1923 to 1929.

3. That the demand for federal regulation of rates and practices of interstate motor transport is primarily of railroad origin and is "an ill-advised effort to turn back to the railroads that small portion of business they have lost by reason of more expeditious and more economical truck and bus services."

4. That the extent to which motor transportation has been a factor in the reduc-

tion of railroad business in recent years has been "grossly exaggerated," and that this loss has been more than offset by the large volume of business accruing to the railroads from motor transport sources.

5. That the restriction of highway transportation services would result "in a great increase in the cost of transportation of passengers and commodities and would add to the delivery costs of millions of producers and consumers, which the business of the country can ill afford at this time."

6. That the rates for highway transportation "must be based exclusively on the cost of the service rendered," without reference to the rate structures of any other form of transportation.

7. That highway users are opposed to the placing of motor transport under the Interstate Commerce Commission, on the ground that the inevitable tendency under such a set-up would be "to freeze highway rates at railroad levels."

8. That no blanket form of regulation will fit the conditions, even as regards the "for hire" elements in the motor transportation industry, and that when the period of code regulation is over, bus operations should be dealt with in a separate and independent measure, if federal legislation is found necessary.

9. That there is serious question as to the possibility of regulating the "for hire" elements in the motor trucking industry effectually "without unduly suppressing the operation of private vehicles used by agriculture and by industry as plant facilities."

10. That the "subsidization" argument advanced as a reason for the "equalization of competition between rail and motor carriers" overlooks the fact that motor trucks and motor buses, while constituting only 13 per cent of all motor vehicles, pay $250,000,000 a year, or 25 per cent of all motor vehicle taxes.

The brief to the President was joined in by members of the advisory committee of the National Highway Users Conference.

Extension of R. F. C. Lending Powers Proposed

The opinion that certain of the lending powers of the Reconstruction Finance Corporation should be extended beyond January 31, 1935, when they expire under present legislation, was expressed by Jesse Jones, chairman of the corporation, on October 16. He suggested the extension for the purpose of taking care of the real estate mortgage and railroad situations.

Review of C. N. J. 1931 Jersey Tax Suit Refused

The Supreme Court of the United States recently refused to review the New Jersey state court proceedings in the suit brought by the Central of New Jersey, contesting the tax rate applied to its property in New Jersey in 1931. In the suit the railroad contended that its tax rate was based on the average rate throughout the state, but that properties other than that of the railway paid a tax only on their assessed value whereas the carriers were taxed on their true values.

While this action of the Supreme Court disposes of the 1931 case, the C. N. J. still has pending similar cases for subsequent years. The 1932 case is now before the federal court on the railroad's application for an injunction while the 1933 and 1934 cases are being prosecuted in New Jersey state tribunals.

Society of Officers, United Associations of Railroad Veterans

The association above named, which has just been changed by the adoption of the word "United" instead of "Eastern," and of which M. W. Jones (Mt. Royal Station, Baltimore & Ohio), Baltimore, Md., is secretary, held its annual meeting in Buffalo, N. Y., on October 6. It was voted to hold the meeting next year in Cincinnati, Ohio, on the first Saturday in October. J. W. Beakes (N. Y., O. & W.) has been elected president.

P. R. R. Permitted to Discontinue Two N. J. Trains

The Public Utility Commissioners of New Jersey have approved the request of the Pennsylvania to discontinue the operation of passenger trains 2602 and 2647, between Camden and Pemberton, the company having presented evidence showing that there had been a loss of $935 a month by the operation of these trains. This line of 25 miles has 15 stations, averaging less than 1½ miles apart. There are still seven trains each way daily except Sunday.

The Cotton States Special

The Seaboard Air Line announces that its new train, the "Cotton States Special," between New York, Atlanta and Birmingham, will be put in operation on October 28. This train is air-conditioned throughout, and it also has an air-conditioned sleeping car between New York and Columbus, Ga. Southbound, the train leaves New York by the Pennsylvania at 9.30 a. m.; Richmond 5.13 p. m., and arrives at Atlanta, Ga. at 6.55 a. m., Central time; and arrives at Birmingham, Ala. at 11.25 a. m.

The "Orange Blossom Special" of the Seaboard Air Line, between northern cities and southern resorts, makes its first trip southbound on December 15, with all cars air-conditioned.

I. C. C. to Investigate State Coal Rates

On petition of the Chesapeake & Ohio, the Norfolk & Western, and the Virginian, the Interstate Commerce Commission has ordered an investigation concerning the lawfulness of the interstate and intrastate rates on bituminous coal from mines in Pennsylvania, Maryland, and northern West Virginia to Philadelphia, Pa., and points taking the same rates for track delivery, and to the Port of Philadelphia for trans-shipment to points in Pennsylvania inside the Delaware capes; and to determine whether the rates on bituminous coal required to be maintained by the order of the Public Service Commission of Pennsylvania cause or will cause any undue or unreasonable advantage, preference, or prejudice as between persons or localities in intrastate commerce on the one hand and interstate or foreign commerce on the other hand, or any undue, unreasonable or unjust discrimination against interstate or foreign commerce; and also to determine what rates, or what maximum or minimum, or maximum and minimum, rates shall be prescribed to remove such unlawfulness, if any, as may be found to exist.

Missouri Utilities Taxes Fixed

The assessed valuation of Missouri utilities for 1934 taxes has been fixed by the Missouri State Board of Equalization at $456,440,895, a decrease of $10,330,866 from 1933. The board cut only $703,868 from the recommendations of the State Tax Commission which had previously fixed the valuations at $457,144,763. The principal classifications show the following total valuations: Railroads, $234,928,679, a decrease of $3,817,180; street railways, $33,232,920, a decrease of $3,647,710; bridge companies, $6,377,757, a decrease of $552,-350; pipe line companies, $33,673,555, a decrease of $2,155,397; telegraph companies, $7,098,465, a decrease of $43,082; electric light and power companies, $90,-899,650, an increase of $293,349; and telephone companies, $50,229,869, a decrease of $408,496.

Low Summer Rates in West

The western railroads will re-establish for the summer season of 1935 the same low round-trip, summer excursion fares westbound to Arizona, Colorado, the Black Hills, Montana, National parks, New Mexico, Alberta and eastern British Columbia and other western points, as were in effect this past summer. Tickets at the reduced rates will be on sale daily from June 1 to September 30, inclusive, with a return limit of October 31, 1935. Short-limit round trip tickets, which are sold on a basis only slightly higher than the one-way fares, will be limited to 16 days from date of sale, and coach tickets to Colorado and the Black Hills on a still lower basis will be on sale Saturdays and Sundays during the period from June 1 to September 30, with a limit of 16 days from date of sale. Stop-over privileges and optional honoring arrangements will be authorized.

Association Of American Railroads Formally Organized

The board of directors of the Association of American Railroads met in New York on October 12 and declared the plan for the formation of the new association, which succeeds the Association of Railway Executives and the American Railway Association, in effect as of that date. Formal written assents to the plan had been received from 88 railroads or systems, representing 247,048 miles of railroad. The executive committee was elected with J. J. Pelley, president and chairman of the board chairman ex-officio and with the following additional members: Daniel Willard, president, Baltimore & Ohio; F. E. Williamson, president, New York Central; J. J. Bernet, president, Chesapeake & Ohio and Pere Marquette; C. R. Gray, president, Union Pacific, and H. A. Scandrett, president, Chicago, Milwaukee, St. Paul & Pacific.

E. S. French, president of the Boston &

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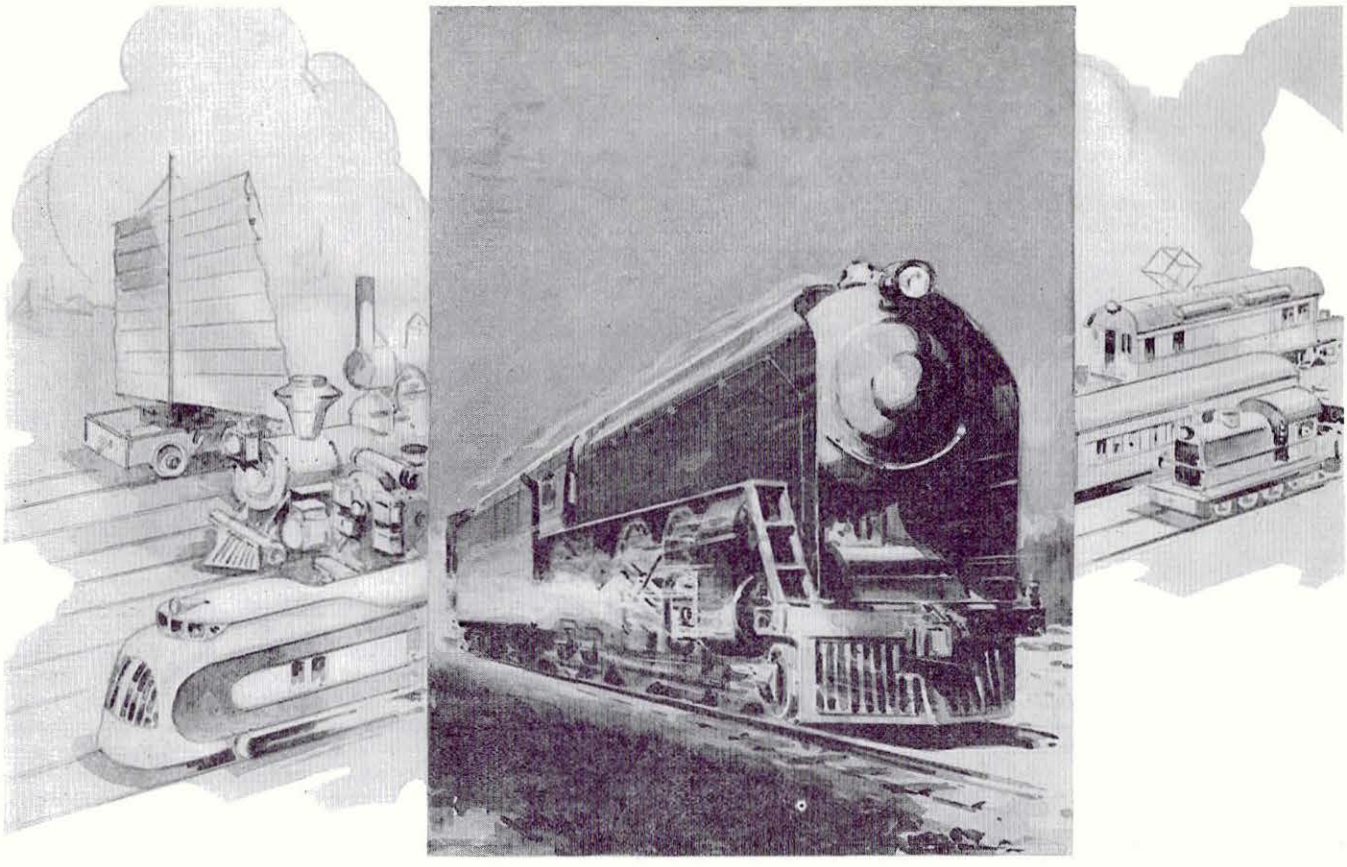

STEAM POWER *is Still Supreme*

Down the years from the early sail car to the stream-lined self-propelled unit, the railroads have experimented with new forms of motive power but steam is still supreme.

Twenty-five years ago electricity was expected to drive out steam. But steam still dominates. Today, the internal combustion engine seeks the spotlight but steam keeps steadily at work supplying transportation.

The pace set by the steam locomotive has made possible the development of the modern railroad. In the last few years this pace has not lagged. Rather has it increased, until today new steam locomotives are available that are capable of supplying any of the requirements of modern railroad transportation.

LIMA
LOCOMOTIVE WORKS
INCORPORATED
LIMA OHIO

Maine, was elected a director to take the place of Mr. Pelley who had been elected while he was still president of the New York, New Haven & Hartford, and M. W. Clement, vice-president of the Pennsylvania, was elected a director in place of W. W. Atterbury. The board will meet regularly on the third Friday of each month and is expected to meet again this month in Washington to elect additional officers of the association. The main office will be in Washington and a branch office will be maintained at Chicago but the New York office of the two old associations may be discontinued.

System Adjustment Board for P. R. R. Shop Craft Employees

Shop craft employees of the Pennsylvania, represented by the Brotherhood of Railroad Shop Crafts of America, have formed, with the P.R.R. management, a system board of adjustment for the settlement of disputes arising between the company and its employees in the maintenance of equipment department. This new adjustment board is the third of its kind established on the Pennsylvania, the maintenance of way and the train service employees having previously perfected similar plans.

The new board will be known as the Pennsylvania Railroad-Long Island Railroad Shop Crafts System Board of Adjustment; eight representatives of the management and a like number of employee representatives will compose the board, the employees and management having equal voting powers. A two-thirds vote will be necessary to reach a decision.

Great Lakes Regional Advisory Board

The Great Lakes Shippers' Regional Advisory Board held its regular meeting at the Statler Hotel, Buffalo, N. Y., on October 10, with an attendance of about 325. The forecasts of the commodity committees indicate a decrease in freight traffic for the current quarter as compared with the movement last year; probable requirements totalling 220,976 cars, as compared with 230,737 in 1933. The heavy movement of ore and concentrates in the early part of the season is responsible for the decrease, as, deducting this class of freight, the estimates would tend to show an increase. The chairman of the automobile committee reports a probable increase of 45 per cent, and increases are predicted also by the grain, the salt and the cement committees.

Addresses were made by L. V. Simms, W. H. Kimball, C. H. Dietrich, Professor Dunford, of Michigan State College, and Fred M. Renshaw.

Railway Club Meetings

The Railway Club of Pittsburgh (Pa.) will hold its next meeting at the Fort Pitt Hotel, Pittsburgh, on Thursday evening, October 25. This will be the annual meeting, with election of officers and entertainment. Prior to the meeting, there will be a dinner at 6 o'clock for members and guests.

The Toronto (Ont.) Railway Club will hold its next meeting at the Royal York Hotel, Toronto, on Friday evening, November 2. The speaker will be W. O. Le Ber, Inspector of Accident Prevention and First Aid, of the Canadian National. His subject will be "Is Accident Prevention A Worthwhile Work?"

The Southern and Southwestern Railway Club will hold its next meeting at the Ansley Hotel, Atlanta, Ga., on Thursday, November 15, at 10 a.m. The speaker will be a representative of Cardwell-Westinghouse Company, and his subject "Draft Gears and Snubbers." The election of officers will take place at this meeting.

Would Give Rhode Island Additional Railway Service

A plan whereby Rhode Island would have one or, perhaps, two new railway services, competitive with that of the New York, New Haven & Hartford, was suggested by George L. Crooker, chairman of the Rhode Island Commission on Foreign and Domestic Commerce, in an address at a recent meeting of the New England Council in Poland Spring, Me.

Pointing out that Rhode Island is now the only New England state served by one railroad alone, Mr. Crooker suggested that the Boston & Albany be permitted to reach Providence over the tracks of the Providence & Worcester, which is now leased by the New Haven, but which, Mr. Crooker said "is very little used." He also suggested that it would be possible to evolve a plan whereby both the Boston & Albany and the Boston & Maine would be permitted to use the Providence & Worcester and thus give three competing railway services to Rhode Island industries.

Trucking Cost Formula Approved for 90 Days

The National Industrial Recovery Board has announced conditional approval of a cost formula to be used in determining operating costs of members of the trucking industry against whom complaints of insufficient rates are filed.

The formula, submitted by the industry's national code authority, is to be effective 90 days from October 16. The code authority is to report within 60 days on any changes or modifications indicated by experience with the formula. A report to the board said:

"This formula has been designed to enable each member of the industry to present in a uniform and practical manner the costs incurred in the conduct of his trucking operations so that when a member's rates are questioned, the state code authority may have the proper evidence on which to reach a decision as to whether such rates are sufficient to meet the cost of service to be performed."

Two Derailments in Iowa in 24 Hours

Two derailments in Iowa within 24 hours caused the death of six persons and injury to 19 others on October 11 and 12. The first to occur was on the Chicago, Milwaukee, St. Paul & Pacific at Guttenberg, in which two passengers and the engineman and fireman were killed and 11 passengers were injured. A two-car local passenger train left the rails on a bridge and fell down a 15-ft. embankment into a creek bed. After the locomotive came to rest on its side, its boiler exploded.

The second case was near Iowa City on the Chicago, Rock Island & Pacific, in which a passenger and a waiter in the club car were killed and eight passengers were injured. Eastbound train No. 14, 11 cars, was derailed by a broken rail weakened by a transverse fissure. The cars fouled the westbound track and were almost immediately struck by westbound train No. 23. Those killed and injured were on train No. 14, the coach, club car and two Pullmans of which were badly damaged.

Safety in the Cab

From a tabulation printed in the Locomotive Firemen's and Enginemen's Magazine, for October, it appears, in data received from 16 prominent railroads, that, in a period of four years, ending with 1932, there were 23 instances of sudden death or disability of a locomotive engineman, wherein it was necessary for the fireman to take charge of the locomotive and stop the train. Of these cases, 13 were on passenger trains and 10 on freight trains. In six of the cases, the engineman fell from the engine, and in two he came in contact with a mail crane or other structure. This information, gathered by D. B. Robertson, president of the Brotherhood, includes statistics of the number of motor cars, including electric, oil-electric, gas-electric and gasoline, now in service on American railroads, where presumably the engineman or motorman has no regular fireman or other monitor. Details are given of the number of train accidents due to the negligence, failure or death of an engineman, where there was no help available from any other person.

The Firemen's Brotherhood proposes to ask Congress at its next session to modify full-crew laws, so as to require the presence of two men in locomotive cabs at all times when a train is in motion.

Passenger Men to Meet at St. Louis

The Seventy-sixth Annual Meeting of the American Association of Passenger Traffic Officers will be held at the Chase Hotel, St. Louis, Mo., on October 25 and 26. The program is as follows: 1. Invocation; 2. Address by L. W. Baldwin, trustee of the Missouri Pacific; 3. Address by President A. D. Bell, assistant passenger traffic manager of the Missouri Pacific; 4. General business; 5. Committee reports; 6. Developments and improvement in passenger train service, (a) Desirability of faster schedules to meet public demand for speed, including developments in streamlined equipment, (b) developments in Pullman and train equipment during the past several years, (c) air conditioning, (d) changes in service to meet existing traffic conditions, and highway competition; 7. Development of passenger traffic, (a) basic passenger fares, (b) Pullman fares, (c) fare reductions for special occasions, (d) handling of privately-owned automobiles in expedited freight service; 8. Advertising, (a) media, (b) joint advertising (1) national (2) local, (c) time table folders, (d) sale of advertising space in time tables, menus, and other media to the public; 9.

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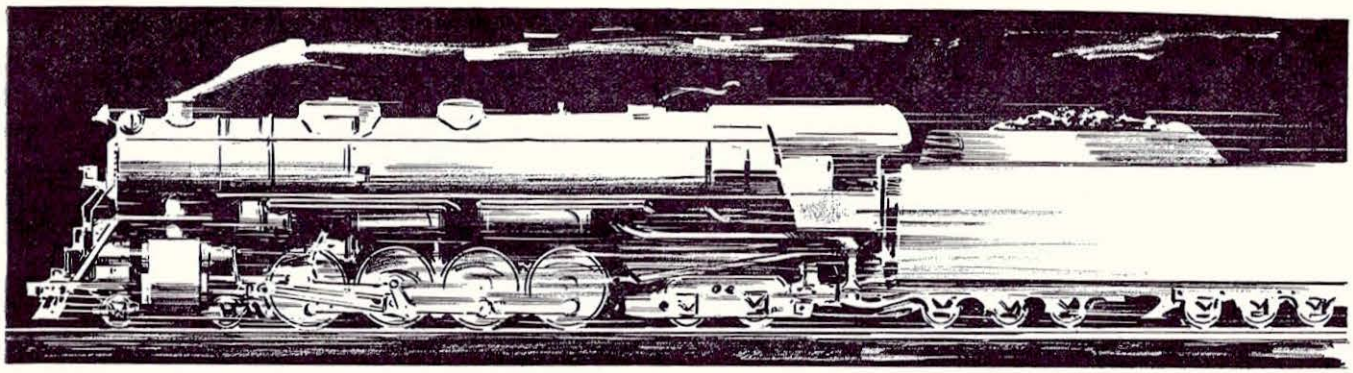
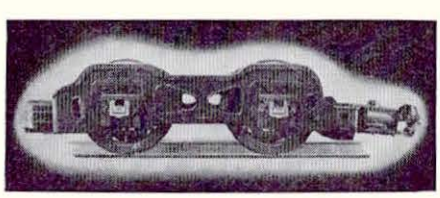


Make Every Locomotive Pound *Productive* WEIGHT

When you "double-head" over the hill you leave the second engine behind when you get the train over the top. • With a non-booster locomotive, the extra cylinder diameter, the extra weight on drivers needed for starting must be hauled around every mile of every run. • At a fraction of the weight, this same tractive effort can be had by application of the Booster to the trailer wheels. • Moreover, this saving in weight means a saving in first cost, a saving in fuel and water and a very substantial saving in locomotive maintenance.



Because material and tolerances are just right for the job, genuine Franklin repair parts give maximum service life.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Ticket scalping; 10. Co-operation between steamship and rail lines; 11. Dining car service; 12. Solicitation of passenger traffic, (a) city ticket offices, (b) selection and training of soliciting personnel; 13. Election of officers. At a dinner on October 25, H. G. Taylor, chairman of the Western Association of Railway Executives, will be the principal speaker.

Burlington Gets $400,000 Damages

Damages of $400,000 were awarded the Chicago, Burlington & Quincy by a jury in the Federal District Court at Superior, Wis., on October 12 for losses suffered by the railroad as a result of inundation of property following the construction of dams on the Mississippi at Alma, Wis., by the Federal government. The railroad asked $600,000 damage from the government.

New York Inland Station

More than a quarter billion pounds of package freight passed over the platforms of the Union Inland Freight Station, located in the Port Authority Commerce Building, at 111 Eighth avenue, New York, in the first two years of operation, according to a report recently made public by Frank C. Ferguson, chairman of the Port Authority.

"Despite general business conditions," Mr. Ferguson said, "the increase in the second 12 months over the prior corresponding period was 60,000,000 lb., or 72 per cent. In the two years of operation, 165,000 trucks, tractors, trailers and horse-drawn vehicles were used by shippers and consignees in moving package freight to and from the station. Separate shipments to the total of 920,000 made up the 230,000,000 pounds that passed over the platforms, indicating 5.6 shipments per vehicle. The average load per vehicle was approximately 1,400 pounds. On a recent typical day, 381 trucks called at the station with parcel freight consigned to or from points on all railroads entering the Port of New York. For handling between the station and the railheads, this package freight was consolidated into 62 railroad truck trailer loads."

Court Decision on Pension Law Expected About November 1

The hearing before Chief Justice A. A. Wheat of the supreme court of the District of Columbia on the bill of complaint filed by the railroads asking an injunction to restrain the operation of the railroad retirement act was concluded on October 16, after nearly a week had been devoted to the presentation of evidence in the form of affidavits and oral argument, and the court indicated that every effort would be made to reach a decision by November 1. Counsel had strongly urged that an effort be made to expedite a decision because on that date the railroads would be required under the law, unless its operation should be stayed, to make the first quarterly contribution of approximately 4 per cent of their payroll, or about $15,000,000, to the railroad retirement fund. The Railroad Retirement Board is now operating on a small advance contribution asked of the railroads. The railroad arguments were presented by E. E. McInnis, general counsel of the Atchison, Topeka & Santa Fe, and Jacob Aronson, vice-president of the New York Central, while the government argument was presented by Hammond Chaffetz, of the Department of Justice. It is understood that the case will be appealed to the Supreme Court of the United States regardless of the outcome in the lower court, but if the court should render a decision sustaining the constiutionality of the law the railroads are expected to ask for a restraining order pending an appeal.

U. P. Train to Make Fast Run

The Union Pacific has announced that its new six-car, high-speed, articulated train, noticed in the *Railway Age* of October 13, is to leave Los Angeles, Cal., on October 22 at 10 p.m. on a 40-hr. run to Chicago to test a schedule on which the railroad proposes to operate the train between the two cities. It will then proceed to New York over the New York Central on a 17¾ hr. schedule. Allowing time to transfer the train from the tracks of the Chicago & North Western to those of the New York Central, the total time from Los Angeles to New York will probably be about 60 hr. At present, the train is being tested on the U.P. lines west of Cheyenne, after which it will be exhibited in Los Angeles on October 21. It will also be shown in eastern cities not visited by the three-car train last spring.

The proposed 60-hr. schedule from Los Angeles to New York will be 16½ hr. less than the fastest present schedule over these railroads, while the 40-hr. time to Chicago will cut 18¾ hr. from the fastest present U.P. schedule between Los Angeles and Chicago.

The fastest run ever made between Los Angeles and Chicago was made by the Death Valley Scotty Special over the Atchison, Topeka & Santa Fe in July, 1905, the time being 44 hr. 53 min. The record run between the Pacific Coast and the Hudson River was made in May, 1906, when the E. H. Harriman Special (starting at 7.33 p.m. on the 5th) traveled from Oakland, Cal., to New York in 71 hr. 27 min. This exceeded by 16 hours the well-known record of 84 hr. 17 min. made by the Jarrett & Palmer Special from Jersey City, N. J. to Oakland, in June 1876.

Report of R. R. Credit Corporation

Of the 53 roads to which loans were made by the Railroad Credit Corporation to meet fixed interest obligations, 13 railroads have repaid their loans in full, while all the others have made reductions in the original amounts of their loans, according to the report of the corporation submitted to its stockholders at their third annual meeting held in Washington on October 16. Total loans made by the corporation to the 53 railroads amounted to $73,691,368. These loans have been reduced by $16,287,947, leaving a balance outstanding of $57,403,421. The amount of the loans paid in full by the 13 railroads totalled $4,282,318.

The railroads turned over to the corporation $75,422,410, representing the sums derived from the increased rates during the 15 months' period ended March 31, 1933, in which the pool was in effect. Liquidating distributions paid in cash or credited on obligations due the corporation, together with refunds of all taxes paid on the revenues, have amounted to $19,482,195, reducing the contributions to $55,940,215.

"Since June 1, 1933," said E. G. Buckland, president of the Railroad Credit Corporation, in the report, "the corporation has been engaged in liquidating its affairs as rapidly as economic conditions permit. During the year ended September 30, 1934, the corporation made eight liquidating distributions to participating carriers aggregating $13,963,842.37, equivalent to 18 per cent of the net contributed fund, of which $6,157,371.20 were in cash, and $7,806,471.17 in credits on obligations due to the Corporation. The total liquidation to date amounts to $17,696,016.82, divided cash $7,697,422.50 and credits $9,998,594.32."

Mediation Board Certifies Representatives of Employees

A dispute having arisen among the employees of the mechanical and other departments of the Rock Island lines as to who are the duly designated and authorized representatives in accordance with the requirements of the railway labor act, the National Mediation Board directed its mediator, G. W. W. Hanger, to investigate. During the course of the investigation the various organizations claiming to represent the employees agreed that a majority of the eligible votes cast should determine the choice of representatives. On the basis of the mediator's report, the board has certified that unions affiliated with the Railway Employees Department of the American Federation of Labor are authorized to represent the machinists, boilermakers, sheet metal workers, carmen, and roundhouse, shop, and car department laborers but that associations of Rock Island employees are authorized to represent the blacksmiths, electrical workers, and telegraph and telephone linemen. The Brotherhood of Maintenance of Way Employees was certified as representing the water service mechanics and helpers.

With respect to the power plant employees, the question has been raised as to whether the votes of these employees should be combined with those of roundhouse, shop, and car department laborers. This question the board will decide when it has secured detailed information as to the nature of the occupations of the 151 employees in the power plant, whether there is interchange of labor between the power house and shop or roundhouse, what the general practice is in the grouping of power house employees, what the classification of such employees is by the Interstate Commerce Commission, and whether the power house is operated as a completely separate unit. The contesting organizations are asked to submit briefs and whatever information they may have in regard to these and any other pertinent questions.

Requests have also been made that the votes of water service mechanics and helpers be combined with those of the sheet

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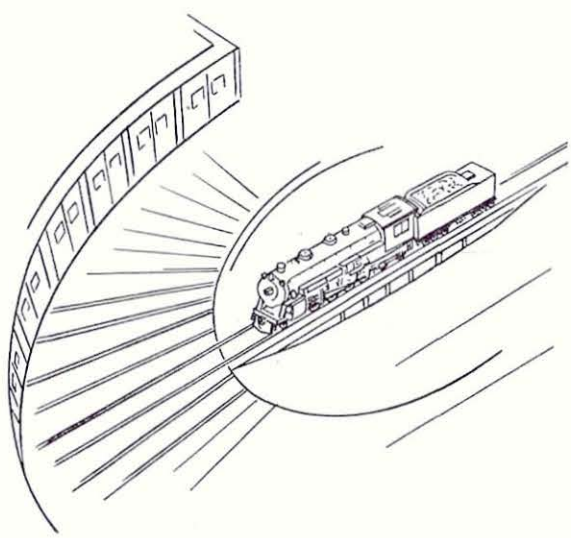
ARCH BRICK

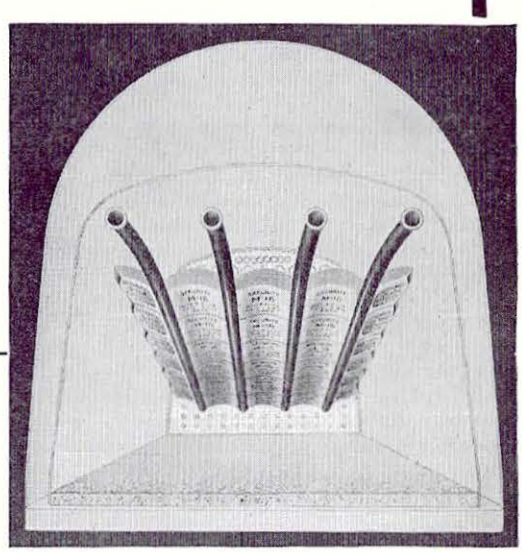
costs so little

TO SKIMP ON THE ARCH IS EXPENSIVE



There is a quarter of a century of specialized engineering back of the Security Sectional Arch. Its design and performance is the result of careful development and study by our combustion and ceramic engineers, in collaboration with railroad engineers.

Paring down on Arch Brick means reduction of arch economy—requires buying more fuel—results in a net loss to the railroad.



HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

NRA MEMBER U.S. WE DO OUR PART

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Locomotive Combustion Specialists » » »

metal workers, and the votes of telegraph and telephone linemen with those of the electrical workers. Inasmuch as there are existing contracts with the Brotherhood of Maintenance of Way Employees covering the water service tenders and with the Rock Island Association of Telegraph and Telephone Linemen & Helpers covering the linemen and helpers, and both of these organizations received clear majorities of the votes, the board felt bound to certify the organizations holding these contracts. The board has also certified, on the basis of an election, that the Railway Employees' Department of the A. F. of L., has been authorized to represent the shop craft employees on the Northern Pacific with the exception of the electrical workers, as to which group neither the A. F. of L. nor the Associated Organization of Shop Craft Employees received a majority of the eligible votes.

The board has also certified that the Railway Employees' Department of the A. F. of L. has been authorized to represent the mechanical department employees of the Gulf, Mobile & Northern.

I. C. C. Outlines Passenger Fare Investigation

The Interstate Commerce Commission has issued a notice to the public stating that the two fundamental issues in its investigation of passenger fares and surcharges are as follows:

(a) The reasonableness or unreasonableness and the prejudicial or non-prejudicial character of the present passenger fares on all the railroads of the country.

(b) The reasonableness or unreasonableness and the prejudicial or non-prejudicial character, particularly in their relationship to the passenger fares, of the Pullman surcharges wherever maintained on any of the railroads of the country.

In considering these two fundamental issues the notice says, there will naturally be involved the questions:

(a) Whether maximum fares only shall be fixed;

(b) Whether minimum fares shall be fixed;

(c) Whether different fares may be charged passengers in coaches than in Pullmans, and if so, how great may that difference to be without becoming unduly discriminatory;

(d) Whether maximum or minimum fares, or both, shall be fixed for the entire country, or may they vary with each major rate territory;

(e) Together with all other questions which may require consideration in order to insure a complete determination of the fares to be charged passengers by rail.

Among the other issues upon which testimony will be received is whether or not certain round-trip passenger fares now in effect are violative of the fourth section of the act, by reason of a greater round-trip fare between two points, whether such round-trip fare is the combination of the two one-way fares or something lower, than either (a) the round-trip fare between more distant point over the same line or route, or (b) the aggregate of the intermediate round-trip fares between the same points over the same line or route, whether or not accompanied by the same restrictions as to time limit, stop-over privileges, or amount of baggage checked free.

Hearing Dates Set for Rate Advance Case

The Interstate Commerce Commission has announced that hearings in the rate advance case, Ex Parte No. 115, Increases in Freight Rates and Charges, 1934, will be resumed at the following places and dates, practically the same as those in the earlier tentative schedule: Denver, Colo., October 26, before Commissioner Aitchison; Salt Lake City, Utah, October 29, before Commissioner Aitchison; Portland, Ore., November 2, before Commissioner Aitchison; Birmingham, Ala., November 7, before Commissioner Tate; Dallas, Tex., November 7, before Commissioner Mahaffie; San Francisco, Calif., November 9, before Commissioner Aitchison; Chicago, Ill., November 16, before Commissioner Aitchison; Washington, D. C., November 26, before Commissioner Aitchison.

Persons wishing to offer testimony at any of the places named should advise the secretary of the commission as soon as possible as to the number of witnesses and their names, if possible, the approximate time which will be required for their evidence on direct examination, and the subject matter or commodity as to which the testimony will be directed. Persons desiring to introduce exhibits in evidence should prepare at least 150 copies for the use of the commission, state commissions, and counsel for applicants and respondents.

At the same time the commission announced the denial of various motions asking the dismissal of the case in whole or part filed by the Farm Rate Council, Northwest Livestock Shippers' Traffic League, National Grange, the Southwestern Millers' Association, and a number of western state commissions. The state commissions had asked that the proceeding be discontinued so far as it concerns the western grain case, the western trunk line class rate case and the consolidated southwestern cases which are now pending on rehearing.

Western Railway Club Discusses Rail Problems

The first Fall meeting of the Western Railway Club was held at the Hotel Sherman, Chicago, Monday evening, October 15, over 300 members and guests being present to hear the paper on "Rail Transportation Problems and Solutions," presented by W. F. Thiehoff, general manager, Chicago, Burlington & Quincy. Calling attention to the reduction in Class I railway operating revenues of 50 per cent from 1929 to 1933 and the reduction of over 65 per cent in expenditures for materials and supplies during the same period, Mr. Thiehoff said that, while the general recession in business has undoubtedly had its effect, the primary cause of the reductions mentioned is the increased use of private automobiles, motor buses, trucks, airplanes, waterways and pipe lines.

In connection with the question of regulating non-rail transportation media, Mr. Thiehoff said: "These forms of transportation, developed during recent years, are not subjected to regulation as to rate, schedules, etc., as are the railroads. They have no investment in right of way, tracks, bridges, etc., pay taxes only on the value of equipment owned and on such terminal facilities as are owned by the operating companies. They do not pay the so-called standard wages under contract as do the railroads; are not subject to the same hours-of-service laws, safety laws, or rulings of the Interstate Commerce Commission; in fact, the owner or operator of a truck or bus may operate on the streets and highways subject to no restriction except the laws and rulings that apply to individuals. There can be 100 trucks or buses operated by as many owners as individuals if permit is obtained and license procured, each having a different rate. Even though operated over competitive routes and different states, they are not required to file tariffs, rates or schedules with the Interstate Commerce Commission."

Mr. Thiehoff called attention to recent expenditures for new equipment, much of which is experimental in character, but designed to improve transportation service as regards speed, cost, comfort, etc. Regarding motive power, Mr. Thiehoff referred to the proposed new steam locomotive described on page 370 of the *Railway Age* of September 29, 1934, and said: "My personal view is that a flexible, light-weight locomotive is desirable and necessary to provide interchangeable power to meet the high-speed requirements of both passenger and freight service. Further progress along these lines will depend on the reaction of the public to service of this character." Mr. Thiehoff quoted Thomas F. Woodlock, former member of the I.C.C., in support of his contention that the laws governing railway rates should and must be modified. He said: "There is now being considered the application of railroads for an increase in freight rates. Opinions differ as to the result that will obtain if granted. However, it is the judgment of experienced railroad executives that the necessity for increased revenues to meet increased costs justifies this action."

In discussion subsequent to the presentation of Mr. Thiehoff's paper, a number of members emphasized the need for constructive regulation of all forms of transportation, and the concensus was that little real permanent improvement in railway conditions can be expected until this regulation is initiated and made effective.

C. & E. I. Objects to Rerouting of Trains

Objection has been filed by the Chicago & Eastern Illinois with the federal coordinator of transportation against an agreement between the Louisville & Nashville and the New York Central whereby through passenger trains which now run over the C. & E. I. between Evansville, Ill., and Chicago will be routed over the Cleveland, Cincinnati, Chicago & St. Louis from Evansville to Danville and over the New York Central from Danville to Chicago, beginning October 28. This change, by which the New York Central Lines will haul the through passenger trains of the L. & N. will terminate an interchange arrangement which has existed between the L. & N. and the C. & E. I. since 1885. It involves the Dixie Flyer, the Dixie Lim-

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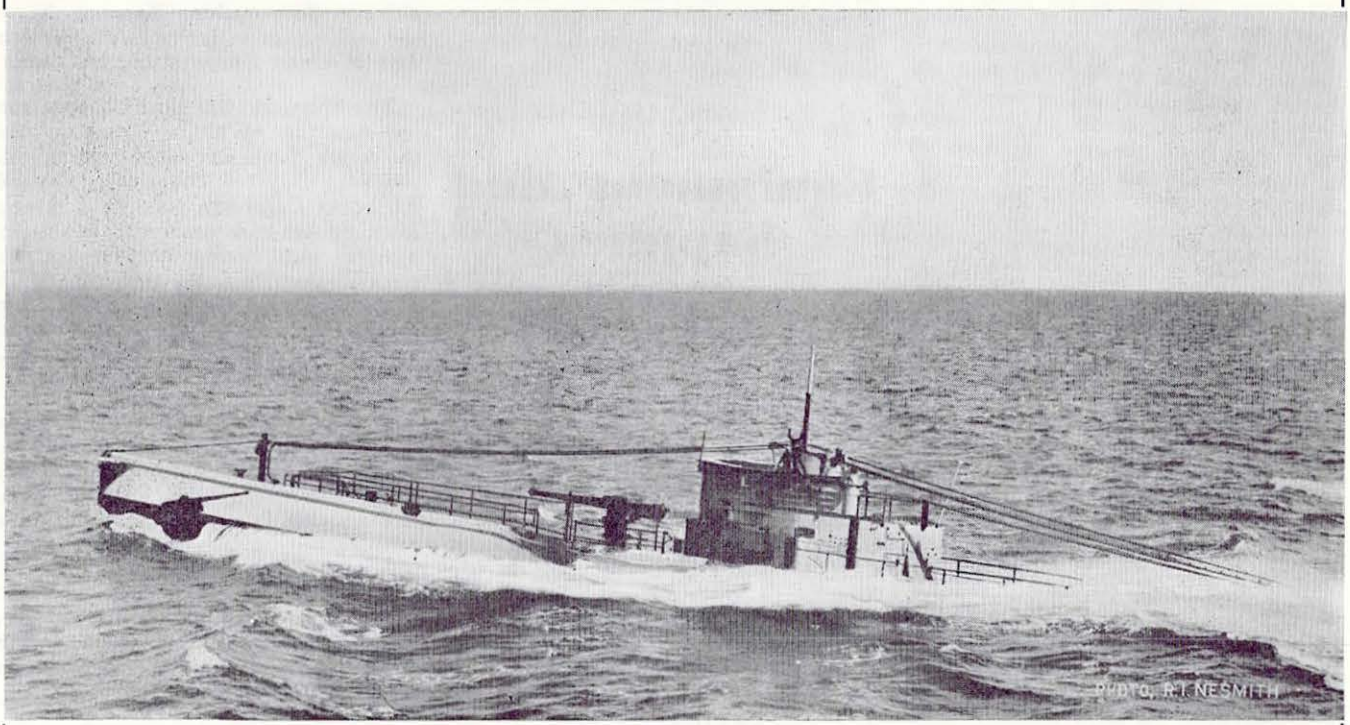
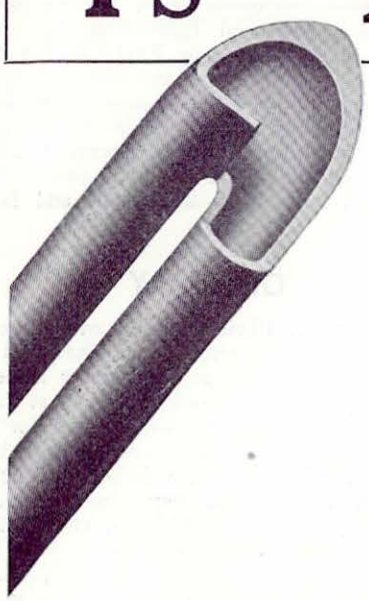
The *Invisible* Part



IS IMPORTANT



The inside of superheater units—the invisible part—is especially important as it carries the flow of steam to the cylinders.

In the design and manufacture of Elesco superheater units, the greatest care is taken to provide full internal areas and smooth internal surfaces. This is the only way to assure an unobstructed flow of steam through the units.

When superheater units become unserviceable after many years of severe duty, the one way to be sure that the interior is kept free from obstructions is to have them remanufactured at the Elesco plant. Here they are rebuilt by the same process as originally employed in making them. Attempts to patch and repair unserviceable units usually result in internal obstructions, which greatly lessen the flow of steam to the cylinders and contain the possibility of a steam failure or the burning out of units.

Play safe with the invisible part of your superheater units!

By having them remanufactured by a process developed to provide unobstructed interiors—as well as proper proportions and serviceable structural condition—you are assured many more years of uninterrupted service from your superheater equipment.

ELESCO

THE SUPERHEATER COMPANY

Representative of

AMERICAN THROTTLE COMPANY, INC.

A-917

60 East 42nd Street NEW YORK

Peoples Gas Building CHICAGO

Canada: The Superheater Company, Limited, Montreal

Superheaters • Feed Water Heaters • Exhaust Steam Injectors • Superheated Steam Pyrometers • American Throttles

ited, the Dixie Express and the Dixie Mail.

Upon receipt of the L. & N. notice that the N. Y. C. proposal had been accepted, the C. & E. I. contended that the rerouting of the trains would constitute a duplicate service entailing unnecessary expense and waste, inasmuch as the C. & E. I. would have to continue its service because of existing mail and express contracts. Because duplicated service is involved, the matter was referred to the federal coordinator; and on October 16, at a meeting in New York, the case was reviewed by the eastern, southern and western coordinating committees having jurisdiction over the railroads involved.

In a memorandum presented at this meeting the C. & E. I. said: "The C. & E. I. has continuously operated through passenger train cars to and from the L. & N. via Evansville since 1885 and during that time it has been the only railroad which has operated regularly scheduled through cars via that gateway. It was the pioneer railroad in the development of passenger, mail and express service in through cars between Chicago and the Southeast, and it has operated through service between Chicago and Florida since 1901. In 1908, it adopted the name Dixie Flyer for its through Florida schedule and that name has been used continuously since that time. Later, when a day departure train from Chicago was placed in service, the C. & E. I. adopted, with the consent of its southern connections, the name Dixie Limited, which is at present primarily a winter train. Subsequently, as additional business developed, a third train, the Dixie Express, was placed in service, and still later a fourth, the Dixie Mail.

"It was about ten years subsequent to the inauguration of the Chicago-Florida service in 1901 and not until a substantial volume of business had been developed, before any of the present existing competitive routes established through car service. The Illinois Central was the first competitor to follow the C. & E. I. in establishing through car service from Chicago to Florida and later the Big Four and the Pennsylvania established their through routes between Chicago and the Southeast via Cincinnati.

"The mail, express and local traffic handled by the C. & E. I. would make it necessary to run trains between Chicago and Evansville on schedules substantially equivalent to the present through trains, even if the through car service with the L. & N. were to be discontinued. Presumably if the N. Y. C. Lines hope to secure and hold the same volume of through passenger travel as is at present enjoyed by the C. & E. I. they will have to maintain the same service. The proposed transfer of the through car service would therefore increase the number of trains between Chicago and Evansville from six each way daily to nine each way daily, without any increase in the passenger traffic between these points. This will constitute wholly unjustifiable duplication of service and waste of transportation.

"During periods of normal business the intermediate stations on the C. & E. I. contribute a substantial volume of passenger travel to the L. & N. and its connections. All of these intermediate points, except Danville, would be without the advantages of through car service. An analysis of the population of the towns and cities served by these respective lines proves that the intermediate towns on the N. Y. C. between Chicago and Evansville cannot possibly produce a volume of traffic equal to that produced by the C. & E. I. towns and cities."

Equipment and Supplies

LOCOMOTIVES

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—The American Locomotive Company is building two streamlined steam locomotives for high-speed trains, for service on this road.

THE ATCHISON, TOPEKA & SANTA FE is considering the placing of an order with the General Motors Corporation for one 3,600-hp. (4 power units of 900 hp. each) Diesel electric locomotive, which will be used in pulling the "Chief" between Chicago and Los Angeles, Cal.

FREIGHT CARS

THE ANGLO MEXICAN PETROLEUM CORPORATION contemplates buying 12 flat cars of 40 tons' capacity.

THE CORN PRODUCTS REFINING COMPANY has placed an order with the General American Transportation Corporation, Chicago, for 75 tank cars of 8,000-gal. capacity.

PASSENGER CARS

THE DELAWARE RIVER BRIDGE JOINT COMMISSION, Camden, N. J., is inquiring for 44 subway cars.

THE ILLINOIS CENTRAL has placed on trial in steam train service between Chicago and Urbana, Ill., an all aluminum observation coach built by the Pullman Car & Manufacturing Corporation and displayed at A Century of Progress last year.

IRON AND STEEL

THE SOUTHERN PACIFIC has ordered 130 tons of structural steel for a bridge at San Jose, Cal., from the American Bridge Company.

MISCELLANEOUS

Air Conditioning

The Atchison, Topeka & Santa Fe has ordered from the Safety Car Heating and Lighting Company, steam ejector air conditioning equipment for 80 additional cars; 30 of these belong to the railroad and 50 are Pullman cars. The order may be increased to cover 121 additional cars.

Supply Trade

The Carbondale Machine Company, Carbondale, Pa., has consolidated its interests in the general refrigeration field with those of the **Worthington Pump & Machinery Corporation,** Harrison, N. J., and will operate in future as the **Carbondale Machine Corporation,** Harrison.

The Shippers' Car Line Corporation, the **American Welding Company** and the **Acme Tank Car Corporation,** subsidiaries of the **American Car & Foundry Company,** at recent special meetings of their respective boards of directors each elected the following officers: **G. R. Scanland,** chairman of the executive committee, succeeding **William M. Hager,** and **Robert Rogers,** president to succeed **R. H. Davenport,** both with headquarters at New York.

V. L. Conley, assistant district manager of the Cleveland (Ohio) sales district of the **American Rolling Mill Company,** Middletown, Ohio, has been transferred to the Pittsburgh (Pa.) district as assistant district manager in charge of a new sales office opened in 17 Court Street building, Buffalo, N. Y. This office will have charge of all the territory in New York State from Utica west. **A. W. Bryant,** with headquarters at Rochester, N. Y., will assist Mr. Conley.

The Socony-Vacuum Oil Company, Inc., New York, has organized a Railroad division to direct the sales of petroleum products in that field. Railroad sales, under this new arrangement, will be under the general direction of **P. M. Gordon,** manager, Industrial Lubrication division, who will be assisted by **Earle Welborn.** In the eastern field the sales and engineering organization will be headed by **R. R. Vinnedge** with office at 26 Broadway, New York City. **John E. Ferry,** at Chicago, will be in charge of the company's railroad business in the middle and far West.

OBITUARY

Albert G. Elvin, inventor of railroad equipment appliances, died on October 10 of a heart ailment at his summer home, Munsey Park, Long Island, N. Y., at the age of 69. Mr. Elvin was born at North Vernon, Ind. He began railway work in 1881, serving as boiler maker and machinist apprentice at Peru, Ind., on the Indianapolis, Peru & Chicago, (now part of the New York, Chicago & St. Louis). In 1889, he went to the Pittsburgh, Cincinnati, Chicago & St. Louis (now part of the Pennsylvania) as a machinist at Indianapolis, Ind., and the following year was put in charge of the tool shop, manufacturing all tools for the entire system. He was later general foreman of the Chesapeake & Ohio at Clifton Forge, Va., master mechanic on the Grand Trunk (now part of the Canadian National) at Montreal, Que., and in January, 1901, he was appointed general master mechanic of the Delaware, Lackawanna & Western at

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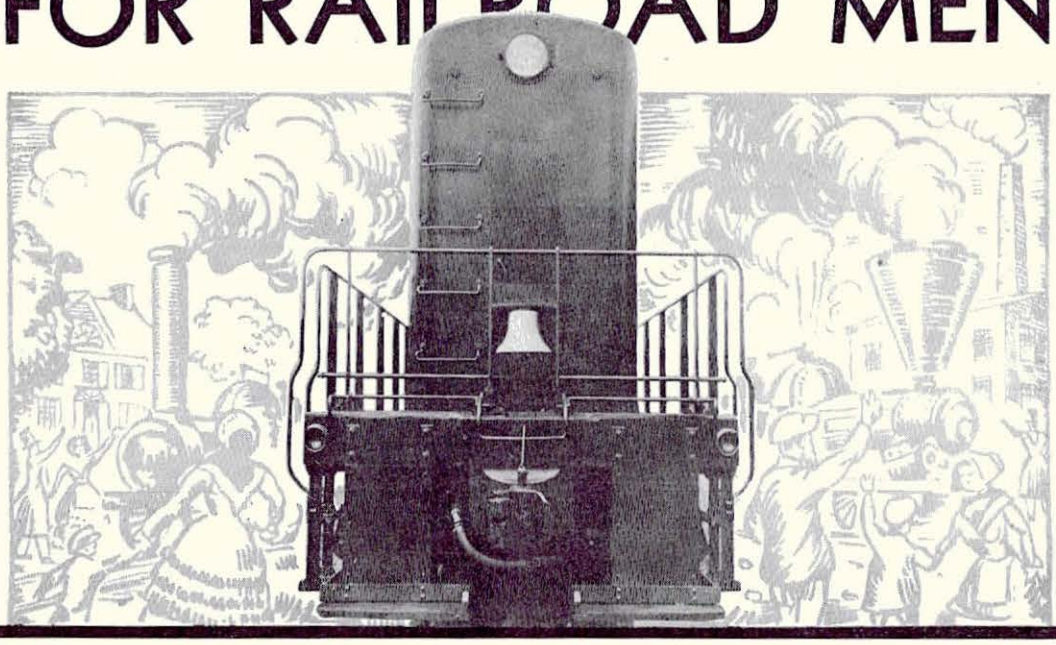
RAILROAD DIESELS FOR RAILROAD MEN



One might easily surmise that our 100 years experience designing and building railway equipment could only affect the design of such a new facility as the Diesel locomotive in a very intangible manner.

But such is far from the case. In the Alco Diesel this 100 years experience is reflected:

1st—In securing the maximum amount of availability with the least possible cost.

2nd—In providing for ease and minimum amount of inspection and maintenance.

3rd—In allowing the yearly reconditioning with existing railway facilities.

These particular 3 features of the Alco Diesel are the "something extra" that this 100 years experience has built into the design. They do not show up in the first cost.

But day-in and day-out they save real dollars after the locomotive is yours.

AMERICAN LOCOMOTIVE COMPANY

ALCO DIESEL

30 CHURCH STREET · NEW YORK · N.Y.

Scranton, Pa. During this time he designed and put into operation many labor-saving devices. Among these, in 1896, he introduced the first pneumatically-operated turntables and transfer tables in this country. In 1902, he invented and patented the Elvin driving box lubricator, later known as the Franklin driving box lubricator, which became standard on the majority of locomotives in this country and Canada. In 1903, he went to the Franklin Railway Supply Company, then known as the Coffin-Megeath Supply Company and remained with the company as mechanical manager until 1916, when he retired from active work due to illness. During the time he was associated with the Franklin Railway Supply Company he invented and patented a pneumatic firedoor and the steam grate shaker. He later invented the Elvin mechanical stoker for steam locomotives. In 1920 he formed in New York the Elvin Mechanical Stoker Company, of which he was vice-president in charge of operation and treasurer. In 1925, he sold his interest in the company and retired from business. He was well known among railway mechanical engineering men and was a member of the American Society of Mechanical Engineers. He also took an interest in civic affairs, having served as mayor of Plandome, Long Island, and later was mayor at Flower Hill.

Financial

BANGOR & AROOSTOOK.—*Bond Offering.*—Brown Harriman & Co. and the Lee Higginson Corporation are offering $2,000,000 of this company's stamped convertible consolidated refunding mortgage 4 per cent bonds due 1951 at par.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Hastings, Minn., to Farmington, 13.68 miles.

CHRISTIE & EASTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Peason, La., to Sandel, 11.5 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*R.F.C. Loan.*—This company has applied to the Reconstruction Finance Corporation for a loan of $9,000,000, to maintain working capital and provide for interest payments due in January and February and also bond interest and principal of equipment trust certificates due in July and August.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Abandonment.*—The Interstate Commerce Commission after rehearing has affirmed its original decision authorizing this company to abandon a branch line extending from Luverne, Minn., to Doon, Ia., 27.6 miles. Twenty miles of the line have been taken up, but abandonment of the remaining portion from Ash Creek, Minn., to Luverne was stayed by the action of interveners, who are owners of grain elevators and other commercial facilities at Ash Creek.

ILLINOIS CENTRAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the Chicago, St. Louis & New Orleans to abandon a branch line extending from Major, Ky., on the south bank of the Ohio river, to Henderson, 4 miles.

LONG ISLAND.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a line extending from Laurelton, Queens, N. Y., to Cedarhurst, 3.5 miles.

MINNEAPOLIS & ST. LOUIS—*Reorganization.*—Executives or other representatives of seven railroads connecting with the lines of this company met with Chairman Jones of the Reconstruction Finance Corporation at Washington on October 15 at his invitation to discuss a proposal advanced by Mr. Jones that the various roads arrange to acquire parts of the line as a substitute for earlier proposals which contemplated its reorganization as an independent property. Arrangements were made for a further conference in Chicago to discuss the proposal. Mr. Jones said it was his thought that inasmuch as this road has been in receivership for 11 years and that the territory it traverses is also served by several larger systems, it seems desirable to explore all possibilities before any reorganization is effected. "It is possible that everybody concerned—the territory served, the creditors, and competing lines—might be better off if some different solution can be found than to maintain this road as an independent system," he said. The R.F.C. has no loan to this road or its receiver, but made a tentative commitment to a reorganization committee headed by F. J. Lisman, of $4,750,000, conditioned upon the plan of reorganization having the approval of the court, the I.C.C. and the R.F.C., and provided the loan was first certified by the I.C.C. Another committee has a different plan for reorganizing the Minneapolis & St. Louis. This committee has asked for consideration of a loan by the R.F.C. should its plan be approved by the court and the I.C.C.

MISSOURI PACIFIC.—*Abandonment.*—The trustees have applied to the Interstate Commerce Commission for authority to abandon a line from Lake City Junction, Mo., to Masso Spur, about 5 miles.

NEW YORK CENTRAL.—*Abandonment.*—This company, the Michigan Central, and the Battle Creek & Sturgis have applied to the Interstate Commerce Commission for authority to abandon the line of the latter from Battle Creek, Mich., to Findley and Sturgis, 40 miles

SOUTHERN PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized the Texas & New Orleans to abandon a branch line extending from Hutchins, Tex., to Lancaster, 4.7 miles.

SOUTHERN PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the El Paso & Northeastern to abandon a branch line extending from a point near Orogrande, N. M., to Zora, 4.7 miles.

UNION PACIFIC.—*Abandonment and Operation.*—The Interstate Commerce Commission has authorized this company to abandon a branch line extending from Knox, near Leavenworth, Kans., to Clay Center, 143.2 miles; to abandon all of its Belleville branch from Lawrenceburg to Belleville, 17.2 miles; to abandon that part of its Junction City branch from Clay Center to Concordia, 35.8 miles; and to operate under trackage rights over the Santa Fe from Miltonvale to Concordia, 20.6 miles. The taxes which the company has been paying on the branch lines to be abandoned have averaged $84,863 annually. In granting the application the Commission observed: "It is undoubtedly true that the loss of rail transportation facilities to the small communities served by the branches would be a serious detriment to persons engaged in business therein, especially those having grain elevators. It is quite possible, as the evidence shows, that a few small business enterprises would be practically ruined if deprived of the services of the branches. Unfortunate as this situation may be, it is obvious that the applicant can not continue to serve these business enterprises indefinitely under such heavy deficits as are shown herein."

Dividends Declared

Montgomery & Erie.—17½c, semi-annually, payable November 10 to holders of record October 31.

Pullman, Inc.—75c, quarterly, payable November 15 to holders of record October 24.

Virginian.—Preferred, $1.50, quarterly, payable November 1 to holders of record October 13.

Average Prices of Stocks and of Bonds

	Oct. 16	Last week	Last year
Average price of 20 representative railway stocks..	35.92	34.74	37.41
Average price of 20 representative railway bonds..	74.44	73.26	67.98

Construction

CHICAGO GREAT WESTERN.—A contract has been awarded to the Ross & White Company, Chicago, for the construction of fireproof locomotive coal and cinder handling facilities at Des Moines, Iowa, to replace equipment that was recently destroyed by fire.

NEW YORK CENTRAL.—Contracts have been let for work on this road as follows: Grade crossing elimination work at Willow avenue, Hoboken, N. J., George A. Fuller Company, New York, contractor; manufacturing, delivering and erection of superstructure of a bridge to carry the Putnam division tracks over the Saw Mill River Parkway at East View station, in Westchester county, N. Y., American Bridge Company, contractor; construction of west earth supporting walls in connection with City Structure No. 4 Express Highway between south line of West Seventy-second street and south line of West Seventy-ninth street, New York City, George J. Atwell Foundation Corp., New York, contractor.

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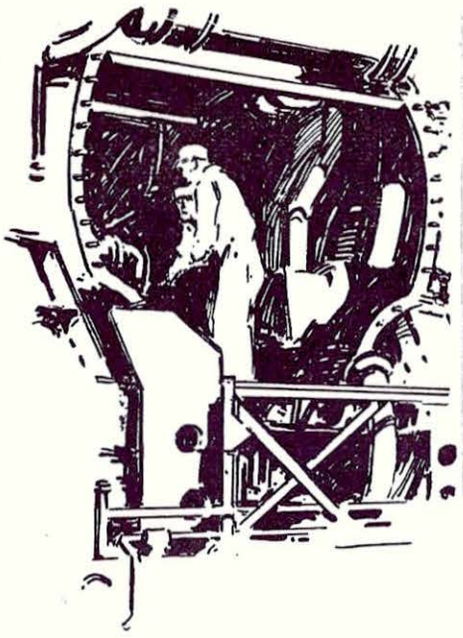

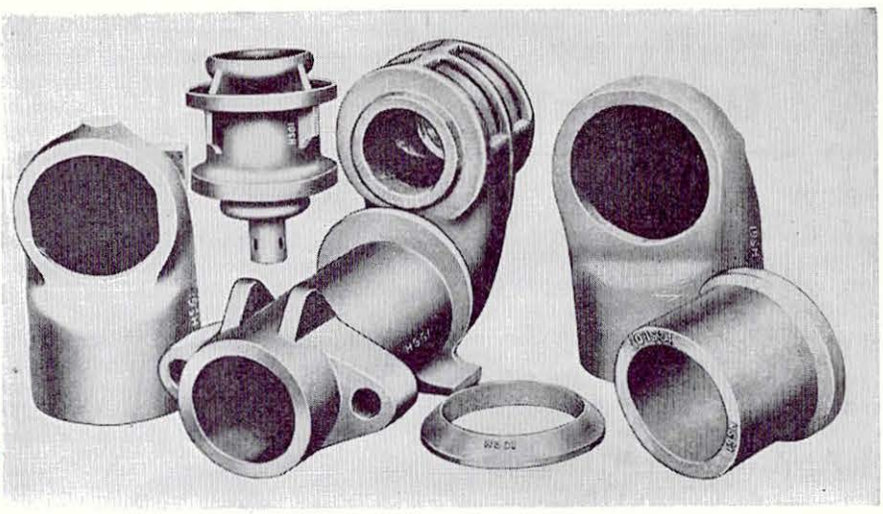

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IT takes time and money to take out a leaky dry pipe—the boiler must be blown off, dome cap removed, throttle box disconnected, and the front end stripped of all parts including the superheater header.

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Railway Officers

EXECUTIVE

L. G. Carleton, chairman of the board of the Midland Terminal Railway, has been elected president, succeeding **Spencer Penrose. E. W. Winslow,** general manager, traffic manager and auditor, has been elected also vice-president. The headquarters of Mr. Carleton and Mr. Winslow remain at Colorado Springs, Colo.

FINANCIAL, LEGAL AND ACCOUNTING

V. C. James has been elected treasurer of the Burlington-Rock Island, with headquarters at Houston, Tex., succeeding **E. H. Jackson.**

R. P. Jones, chief acounting officer for the Seaboard Air Line has been appointed chief finance and accounting officer with headquarters at Norfolk, Va. **C. W. Powell,** assistant general auditor for the Seaboard Air Line has been appointed auditor of disbursements to succeed **B. F. Allen,** who has been appointed treasurer for the receivers, with jurisdiction extending over the treasury and insurance departments.

OPERATING

G. P. Brock, general manager of the Gulf, Mobile & Northern, has had his headquarters moved from Laurel, Miss., to Mobile, Ala.

Samuel R. Hursh, whose appointment as superintendent of the Wilkes-Barre division of the Pennsylvania at Sunbury, was noted in the *Railway Age* of October 6, was born in Mifflinburg, Pa., in March, 1894. Following his graduation from

Samuel R. Hursh

Pennsylvania State College in 1916 he began work for the Pennsylvania and has been continuously in its service, except for a furlough for military service during the World War. Mr. Hursh has served as chainman, rodman, assistant supervisor and supervisor on several divisions in the Eastern part of the system. He was appointed division engineer in the maintenance of way department in November, 1928, and thereafter served in that capacity on the Atlantic and Philadelphia terminal divisions and on the Pittsburgh division to which latter he was assigned at the time of his promotion to the superintendency of the Wilkes-Barre division.

Charles G. Grove, whose appointment as superintendent of passenger transportation of the Eastern region of the Pennsylvania at Philadelphia was noted in the *Railway Age* of October 6, was born in York County, Pa., in December, 1890, and was graduated from Pennsylvania State College. He entered the service of the P. R. R. in September, 1912, as a chain-

Charles G. Grove

man in the chief engineer's department and in the following year was transferred to the maintenance of way department, serving as a rodman, assistant supervisor and supervisor on various operating divisions. In November, 1928, he was appointed division engineer of the St. Louis division at Terre Haute, Ind., and three years later he became division engineer of the Panhandle division at Pittsburgh, Pa. He was advanced to superintendent and assigned to the Wilkes-Barre division in July, 1933. During the World War Mr. Grove was an officer of the 104th Engineers, 29th Division.

ENGINEERING AND SIGNALING

P. E. Feucht, division engineer of the Renovo division of the Pennsylvania, with headquarters at Erie, Pa., has been transferred to the Ft. Wayne division, with headquarters at Ft. Wayne, Ind., succeeding **J. S. Gillum,** who has been transferred to the Pittsburgh division, at Pittsburgh, Pa., replacing **Samuel R. Hursh,** who has been promoted.

J. M. Fair, division engineer on the New York Zone of the Pennsylvania, with headquarters at Jamaica, Long Island, N. Y., has been promoted to engineer maintenance of way on the Central region with headquarters at Pittsburgh, Pa., to succeed S. L. Church deceased and has been succeeded by **D. Davis, Jr.,** division engineer with headquarters at Terre Haute, Ind. Mr. Davis has been succeeded by **R. H. Crew,** division engineer with headquarters at Indianapolis, Ind., who in turn has been succeeded by **E. O. Wood,** division engineer of the Chicago Terminal division, who has been succeeded by **W. R. Parvin,** division engineer with headquarters at Cape Charles, Va.

SPECIAL

J. N. Godman has been appointed chief of police for the Reading and the Central of New Jersey, succeeding **Bruce Stout,** resigned.

OBITUARY

C. R. Peddle, retired assistant purchasing agent of the Pennsylvania, died on October 6 in California, where he had lived since his retirement in 1929. He was 76 years old.

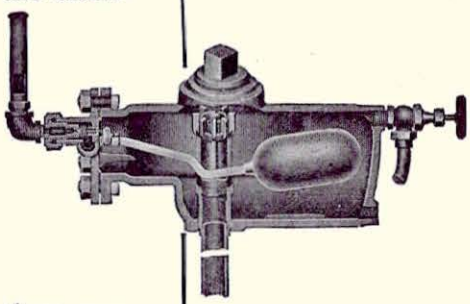
T. W. Mathews, secretary and treasurer for the receivers of the Seaboard Air Line at Norfolk, Va., died on October 6, after 38 years of service with this road. Mr. Mathews was born in Savannah, Ga., on November 7, 1882, and was educated in the public schools of Jacksonville, Fla., the University of Florida and Intercontinental Univiersity, Washington, D. C. He entered the service of the Florida Central & Peninsular (now S.A.L.) in June, 1896, as office boy. From 1899 to 1913 he served successively as secretary to the auditor, clerk and chief clerk to the comptroller for the Seaboard Air Line. In 1913 he was promoted to assistant comptroller for the same road and in 1918 he was appointed federal treasurer, becoming assistant treasurer in 1920 and treasurer in 1928. Mr. Mathews was also treasurer and assistant secretary for the Macon, Dublin & Savannah.

E. G. Ericson, who retired in 1927 as assistant chief engineer of the Pennsylvania System, with headquarters at Pittsburgh, Pa., died on September 22 at his home at Sewickley, Pa. Mr. Ericson was born on May 7, 1857, at Ramdala, Sweden, and was educated at the Royal Polytechnical Institute at Stockholm. After engaging for a time in engineering work in his homeland he came to this country and, on September 1, 1883, entered the service of the Pennsylvania as a draftsman and transitman in the office of the chief engineer at Pittsburgh. After serving as supervisor on the Pittsburgh, Ft. Wayne & Chicago (now part of the Penna.) at Wooster, Ohio, from 1886 to 1890, he served successively as engineer maintenance of way of the Cincinnati & Muskingum Valley (now also part of the Penna.), in a similar position on the Western division of the P. Ft. W. & C., assistant engineer in charge of construction and maintenance in the office of the chief engineer of the Pennsylvania lines west of Pittsburgh, and as principal assistant engineer of the Northwest region. During federal control of the railroads Mr. Ericson served as principal assistant engineer of construction of the lines west of Pittsburgh and in 1920 he was advanced to assistant to the chief engineer of the system, holding this position until his retirement in 1927.

Pays Big Returns
While Guarding
Lives and Property

RAILROADS have discovered that the BARCO Low Water Alarm is a good paying investment as well as a dependable sentinel when danger threatens.

Big savings are being effected through the elimination of those brief periods of low water which are responsible for many expensive renewals of crown bolts and crown sheets.



The BARCO Low Water Alarm can be tested in two minutes at any time or place under conditions exactly duplicating low water conditions without lowering the water in the boiler or making any adjustments.

The presence of a BARCO Low Water Alarm inspires confidence. With the banishment of fear, high water levels disappear. Many unnecessary items of maintenance are thus prevented. Locomotives are operated more efficiently and cost less to maintain.

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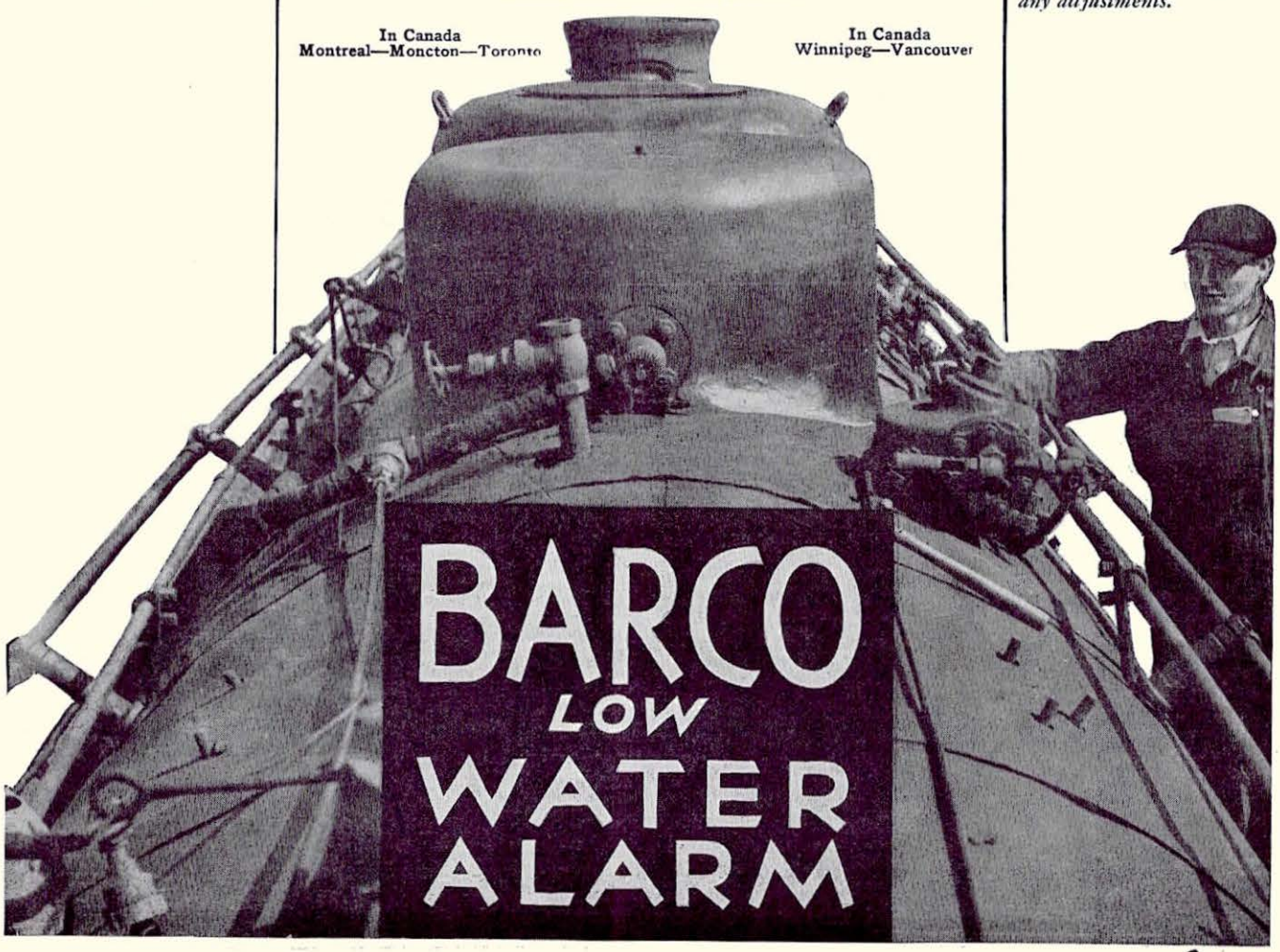
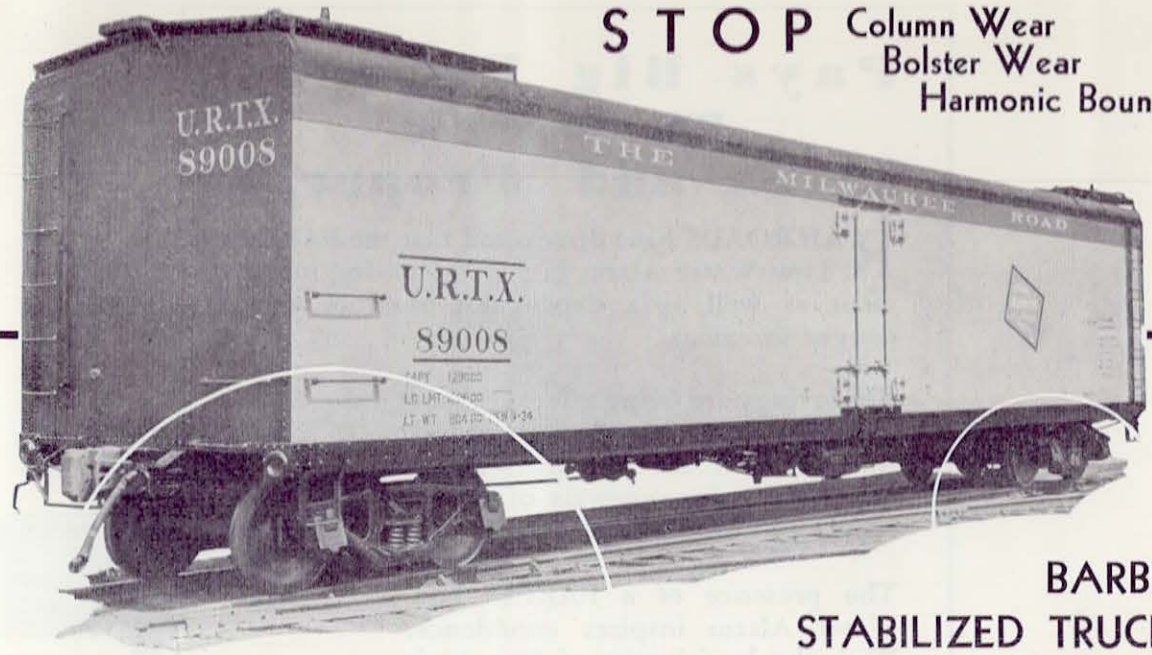


STOP Column Wear
Bolster Wear
Harmonic Bouncing



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ONE of twenty-five new noteworthy 70-ton all steel refrigerator cars, designed and built by the General American Tank Car Corporation for service on a leading Western Railroad.

STABILIZED TRUCKS in service for nearly two years, show no appreciable wear in columns, bolsters or in the simple stabilizing mechanism. There is, as yet, no record of a single claim for cargo damage due to hard spring action.

STANDARD CAR TRUCK CO.

McCORMICK BLDG.
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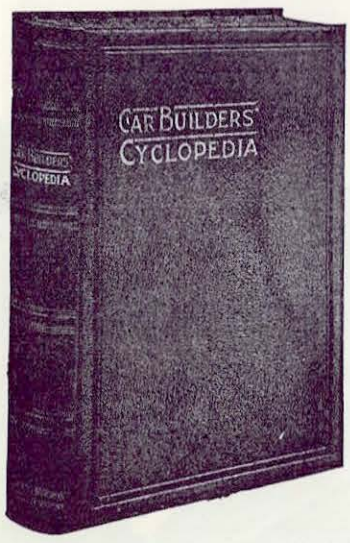

Car Builders' Cyclopedia
of American Practice

Edited by Roy V. Wright

Editor of "Railway Mechanical Engineer"

Prepared under the auspices of the Mechanical Division of the American Railway Association this book is indispensable to car shop superintendents, master car builders, general foremen and others in charge of the construction and repair of rolling stock. The Thirteenth Edition contains new equipment, standard specifications, recommended practices, scale drawings, illustrations, and technical data regarding all kinds of manufactured products used in car work.

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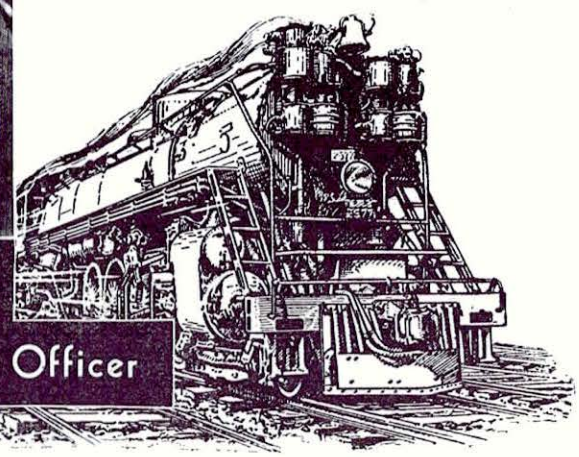
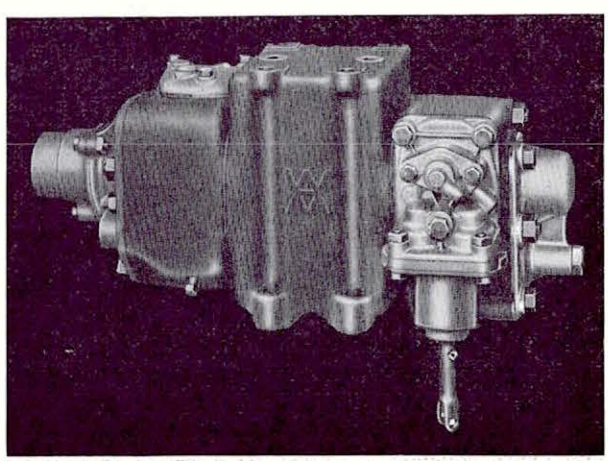


"COSTS MUST BE CUT", decrees the Chief Operating Officer

THE Chief Operating Officer scans every item of expense—frowning at increases and smiling upon reductions . . . . When reports indicate that higher train schedules are being maintained without delays; when damages to equipment and lading are "few and far between"; when heavier tonnage trains are handled in safety; when a high percentage of cars are kept available for service at all times; when fuel expense is at a minimum;—he knows that all factors which effect operating costs are functioning efficiently. The "AB" Equipment—our new brake for freight train service—contributes greatly to these results.



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Train Dispatching Equipment—Among Western Electric's latest contributions to improved train dispatching are . . . New Compact Selector Key . . . Jack Box . . . Selector.

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Train Dispatching Equipment (Continued) — Balanced Armature Type Magnetic Loud Speaker combines clear reproduction with compact size—handy mounting.

Wire and Cable—For vital circuits — dependable wire and cable. A convenient source for all kinds — including Western Electric Lead Covered Cable.

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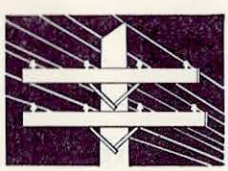

4

Line Construction Materials—From pliers to poles, construction materials of all kinds may be ordered, shipped, and assembled economically and conveniently.

Lamps and Lighting Equipment—A complete selection of quality lamps, fixtures, and glassware is readily available from Graybar. Meets exacting railroad needs.

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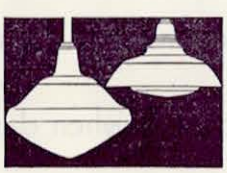

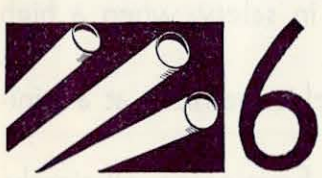

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Underground Material—Every type of conduit for railroad use — also conduit fittings, tools, transformers, accessories. No need to seek any further than the nearest Graybar warehouse.

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STANDARD COUPLERS
Including
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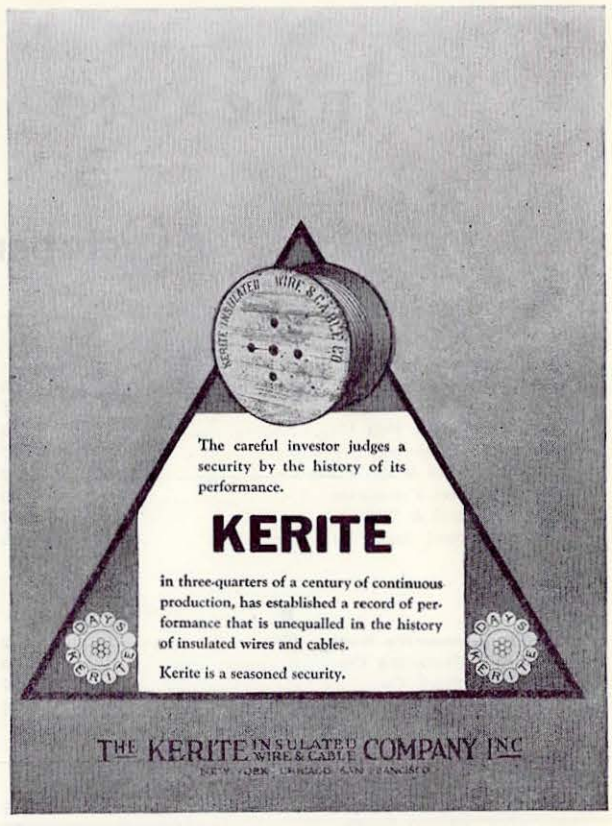
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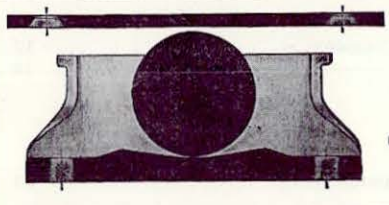

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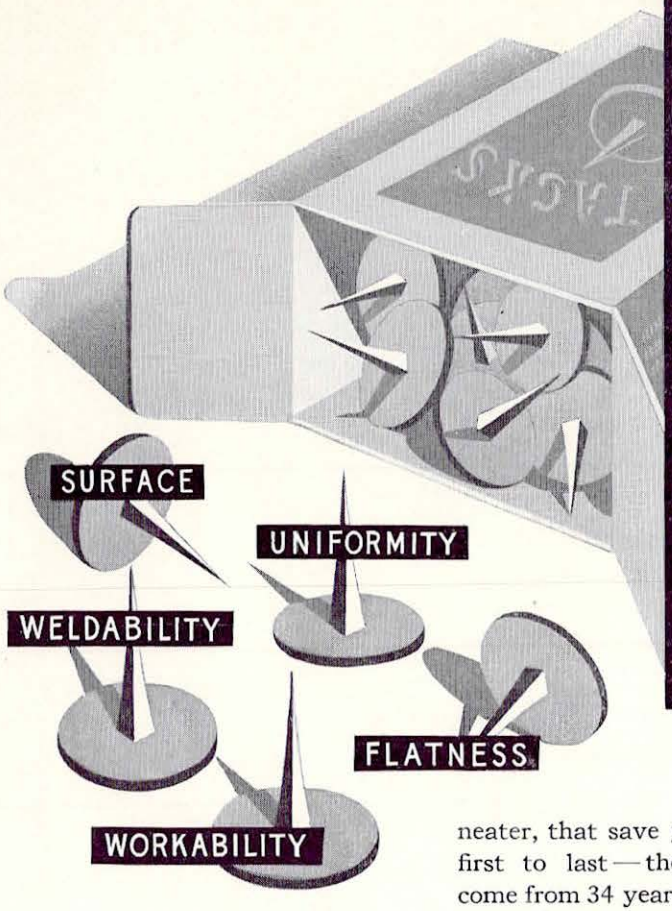

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Swissvale, Pennsylvania

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Rochester, N. Y.

112

History in the Making

"Mr. Forsyth has lately made some experiments to prove the comparative value of colored lights for signal purposes; and purposes only to use the red light in case of danger", stated The Illustrated London News of February 21, 1846.